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1540 & 1541 + C

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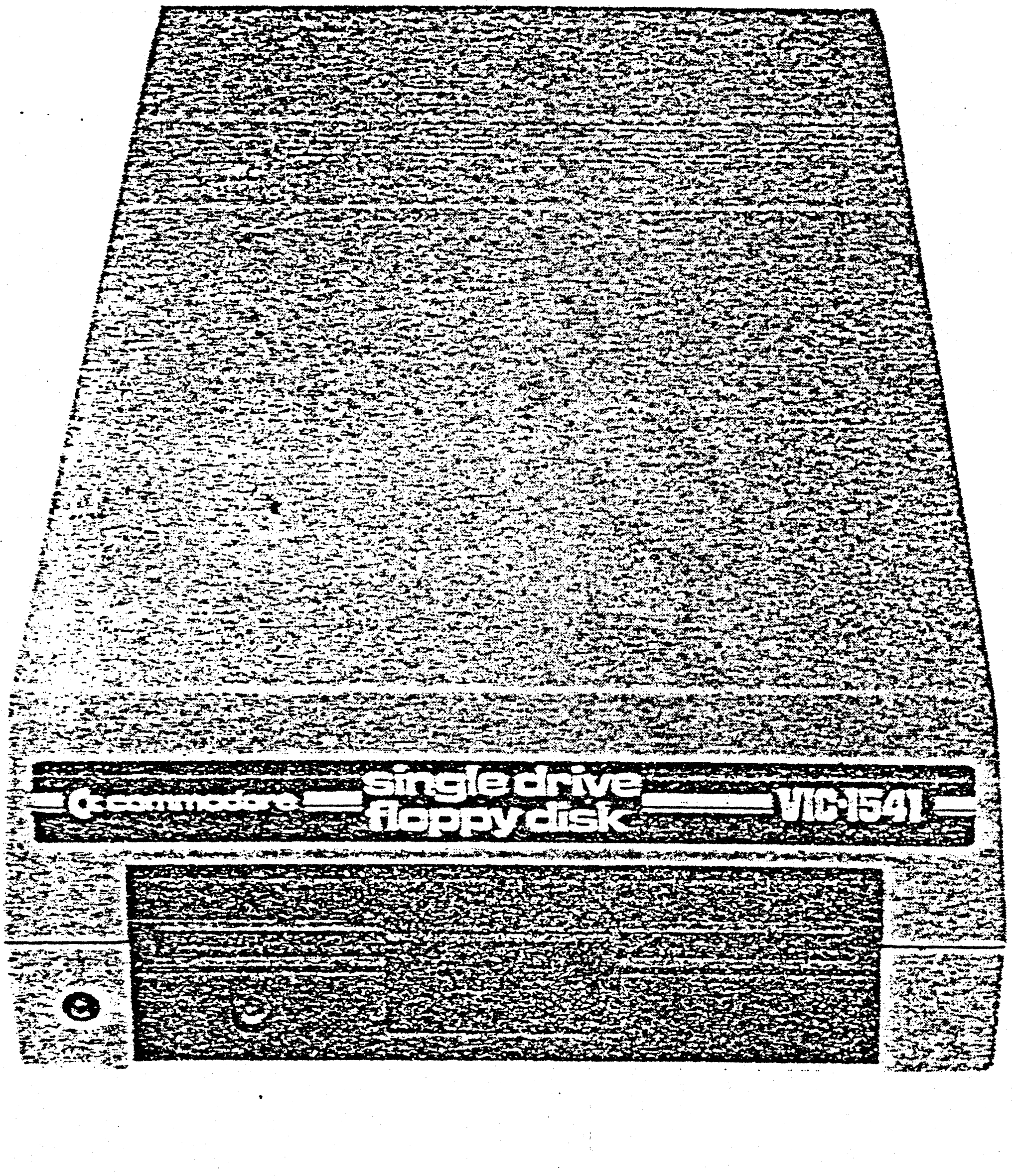
Commodore
Single Disk Drive

Technical Manual

Model 1540


commodore
single drive
floppy disk
VIC-1541

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Chapter One

1.1 Scope

In this chapter, a desciption is made of the proceedures necessary for servicing the Model 1540/1541 Floppy Disk Drive.

1.2 Unpacking

Special care should be exercised during unpacking not to damage the unit.

Unpacking proceedures are as follows:

a) Remove cardboard sleeve from styro-foam box

b) Open 'styro-foam' box and remove drive

c) Check the drives front door for proper operation

Caution

Do Not Use Magnetized Tools

1.3 Protection against noise

A week signal from the media is detected in the head section of the drive. Hence, do not install the drive near a TV set or other areas where electromagnetic noise is generated. (i.e. motors, air-conditioners, etc)

1.7 Input/Output Cable

The length of the cable between the host and the drive (between the host and the last drive when the drives are daisy chained) should not exceed 5 meters (16 feet).

1.8 DC power source

The drive is powered by a internal power supply providing the drive with +12V and +5V.

1.9 Initial inspection

The drive can be briefly inspected for its operation by the following proceedure. Install the drive, connect the power and I/O cables. Turn drive on and make sure the front panel power lamp is on. Proceed to step 2.2.

1.10 Outline of functions

The 1540/1541 Minifloppy Disk Drive mechanism is composed of the data read/write head, track positioning mechanism, spindle drive mechanism and eject mechanism.

1.11 Read/Write Head

The Read/Write head uses a glass-bonded, ferrite/ceramic head. Track-to-track erasing is accomplished by the straddle erase method. The surface of the Read/Write head is mirror-ground to minimize weear of the head and media. Also, the head is desighned in such a way that the maximum signal can be obtained from the media surface.

1.12 Track positioning mechanism

Positioning of the Read/Write Head is accomplished by a stepping motor and steel belt. The stepping motor rotates clockwise or counter-clockwise by two steps per track. The control circuit on the logic board selects the direction and number of step to the desired track.

1.13 Spindle drive mechanism

The spindle drive motor operates on 12 VDC and turns the spindle, through a belt drive, at 300 revolutions per minute. The speed of the drive motor is controlled by a feedback signal from a tachometer which is housed in the drive motor assembly. The feedback signal controls a servo amp that supplies the 12 VDC drive current.

1.14 Eject mechanism

When the media is inserted in the Disk Drive and the door is closed the media is clamped by the spindle and hub. At this time the ejector mechanism is loaded by the insertion of the disk and locked. When the door is opened, the ejector mechanism is unlocked and the media pops out of the door.

Chapter Two

2.1 Mechanism Explanation

The 1540/1541 mechanism is installed in the system horizontally, however the drive will fuction if mounted vertically. The mechanical parts of the drive include an aluminum chassis, a stepping motor, head positioning assembly, drive motor, a hub and spindle assembly for centering and retaining the media during operation. The magnetic head is of a glass ceramic construction.

2.2 Function explanation

The drive is itself an independent memory device. The drive is composed of a media clamp rotating mechanism, ahead positioning mechanism and an eject mechanism. When the front door opens, the media can be inserted. All positioning operation excluding insertion and removal of the media are controlled by the internal guide mechanism. Closing the front door causes the media clamp mechanism to operate. Two operations are performed in the following order:

a) The media is centered.

b) The media is clamped and retained between the spindle and the hub.

The spindle and hub rotate at 300 r.p.m. through a closed-loop control circuit employing a D.C. motor/tachometer. It is important that the relationship between the head and the media is maintained correctly during operation. For this purpose, a pressure pad is used to hold and press down the media(about 12g) from the opposite side of the head, to maintain the correct contact with the head. This head assembly is coupled by a metal band to a four phase stepping motor the performs the track positioning. One step of the stepping motor corresponds to a 1/2 track movement. Use of a high-speed stepping motor and metal band drive, this series of disk drives can perform access operations at a very high speed.

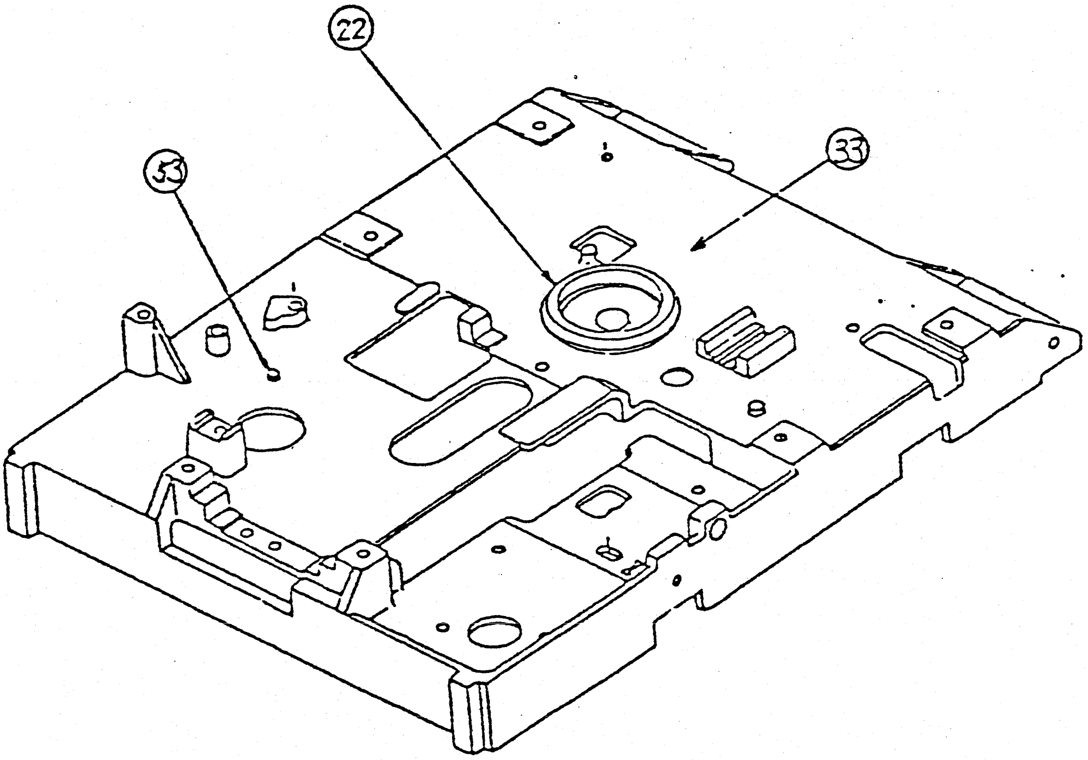
2.3 Assembly procedure

2.3.1 The housing assembly; install the eject pin and the spindle.

2.3.2 The housing assembly; on the reverse side install the spindle pulley.

2.3.3 FIG 1, The housing unit.

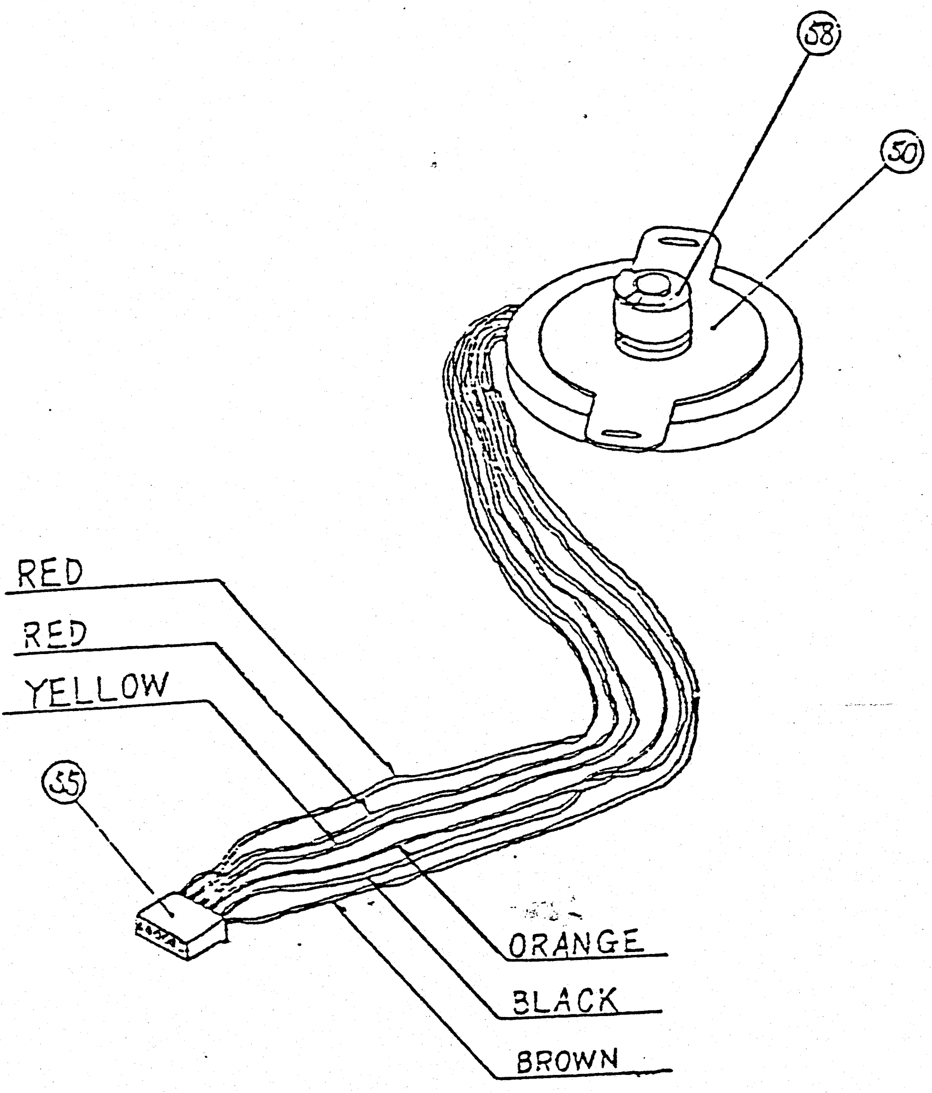
Part	Desciption
22	spindle
33	housing assembly.
53	eject pin



2.3.4 The stepping motor assembly; install the stepping pulley.

2.3.5 FIG 2, The stepping motor unit

Part	Description
50	stepping motor assembly
55	connector housing
58	stepper pulley


58
50
RED
RED
YELLOW
55
ORANGE
BLACK
BROWN

2.3.6 The D.C. motor assembly; install the motor pulley.

2.3.7 FIG 3, D.C. motor and control PCB

Part	Description
44	motor control PCB
48	D.C. motor
51	connector housing
59	D.C. motor pulley

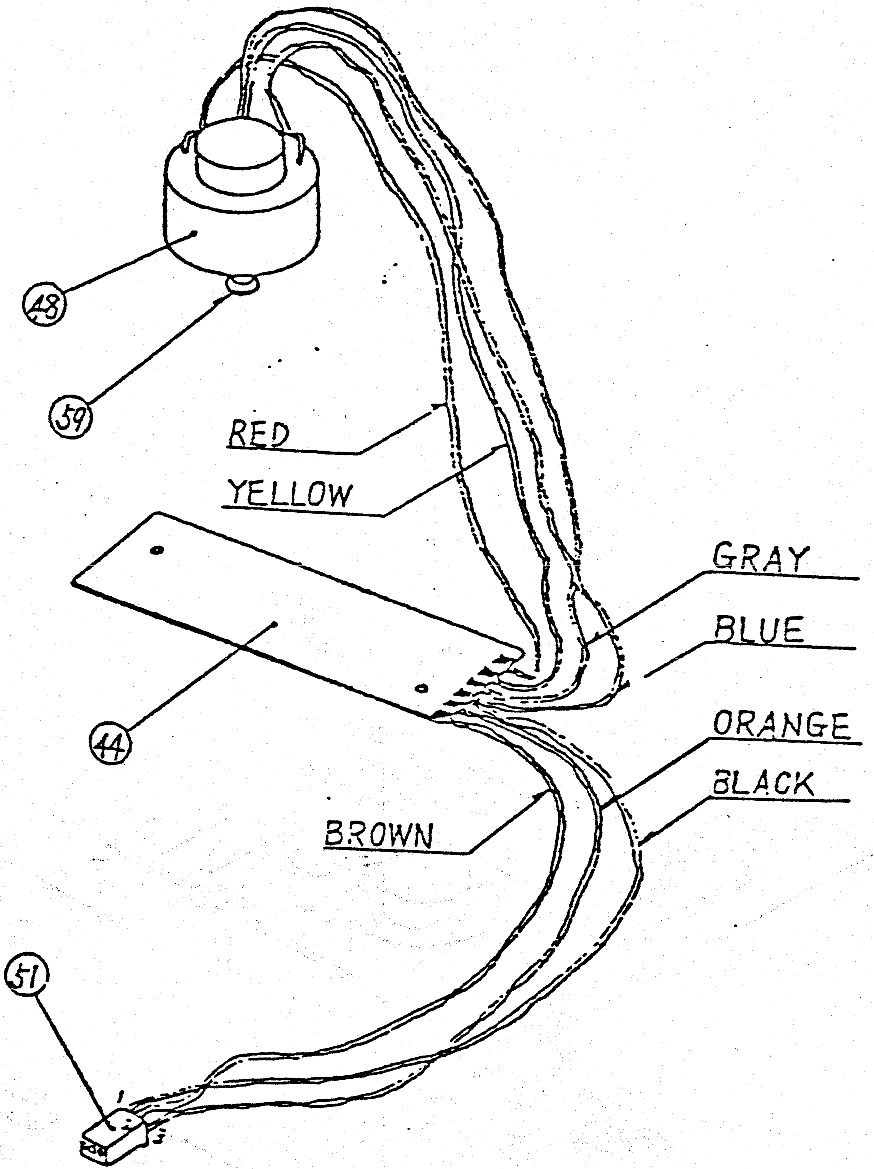

48
59
RED
YELLOW
GRAY
BLUE
44
ORANGE
BLACK
BROWN
51
1
3

FIG. 6

Part	Description	Part	Description
20	binder screw	37	washer
21	diskette guide	38	eject spring
28	LED clamp	39	eject plate
29	front panel	40	slider
30	Flush screw	43	diskette guide
31	LED assembly	52	connector housing
32	LED holder ring		

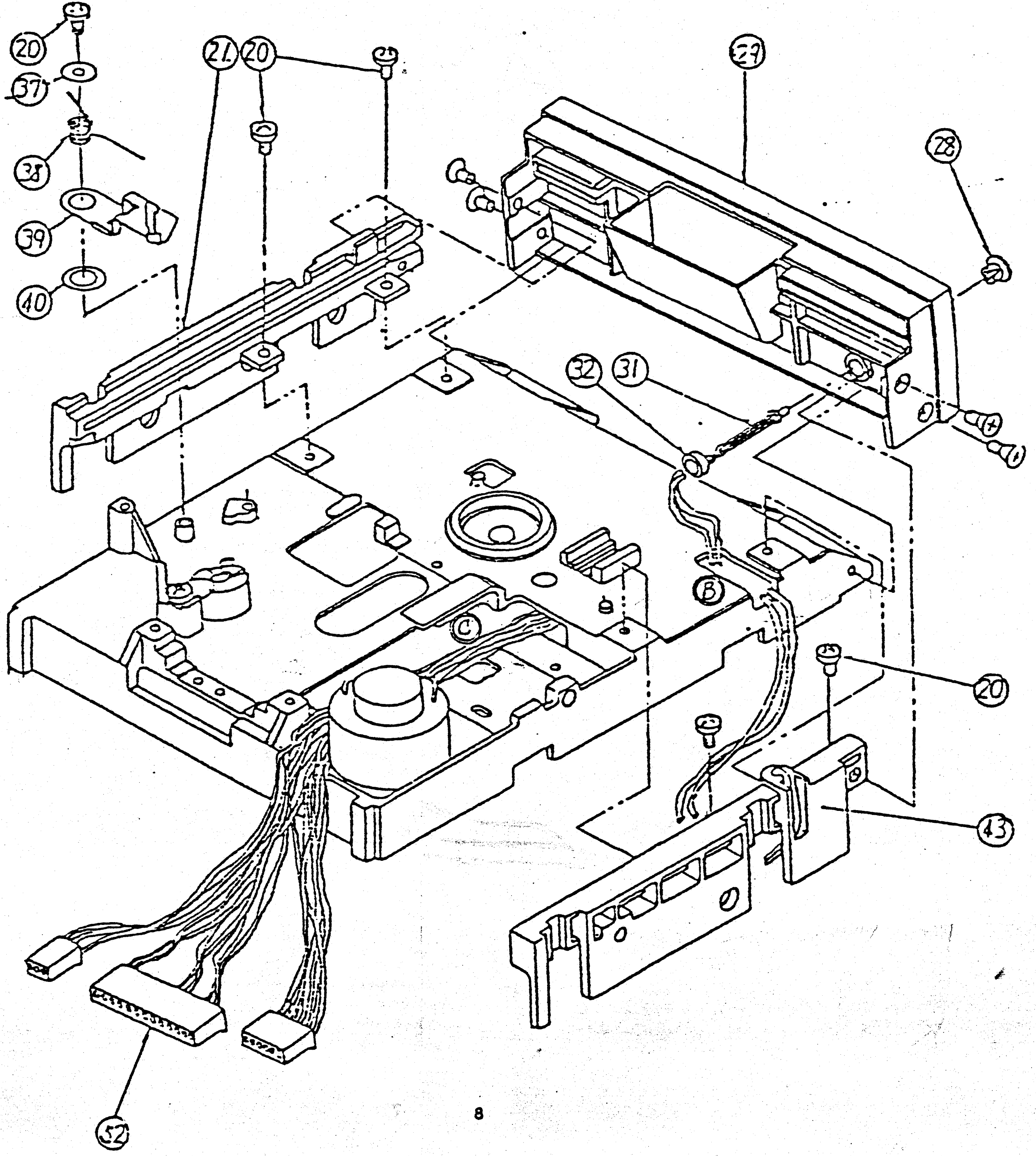

20
37
38
39
40
21
20
29
28
32
31
30
B
C
20
43
52

FIG 7.

Part	Description
15	binder screw
18	binder screw
24	tension pulley
25	guide shaft keeper
26	guide shaft
34	metal band
35	washer
36	head assembly
56	tension spring

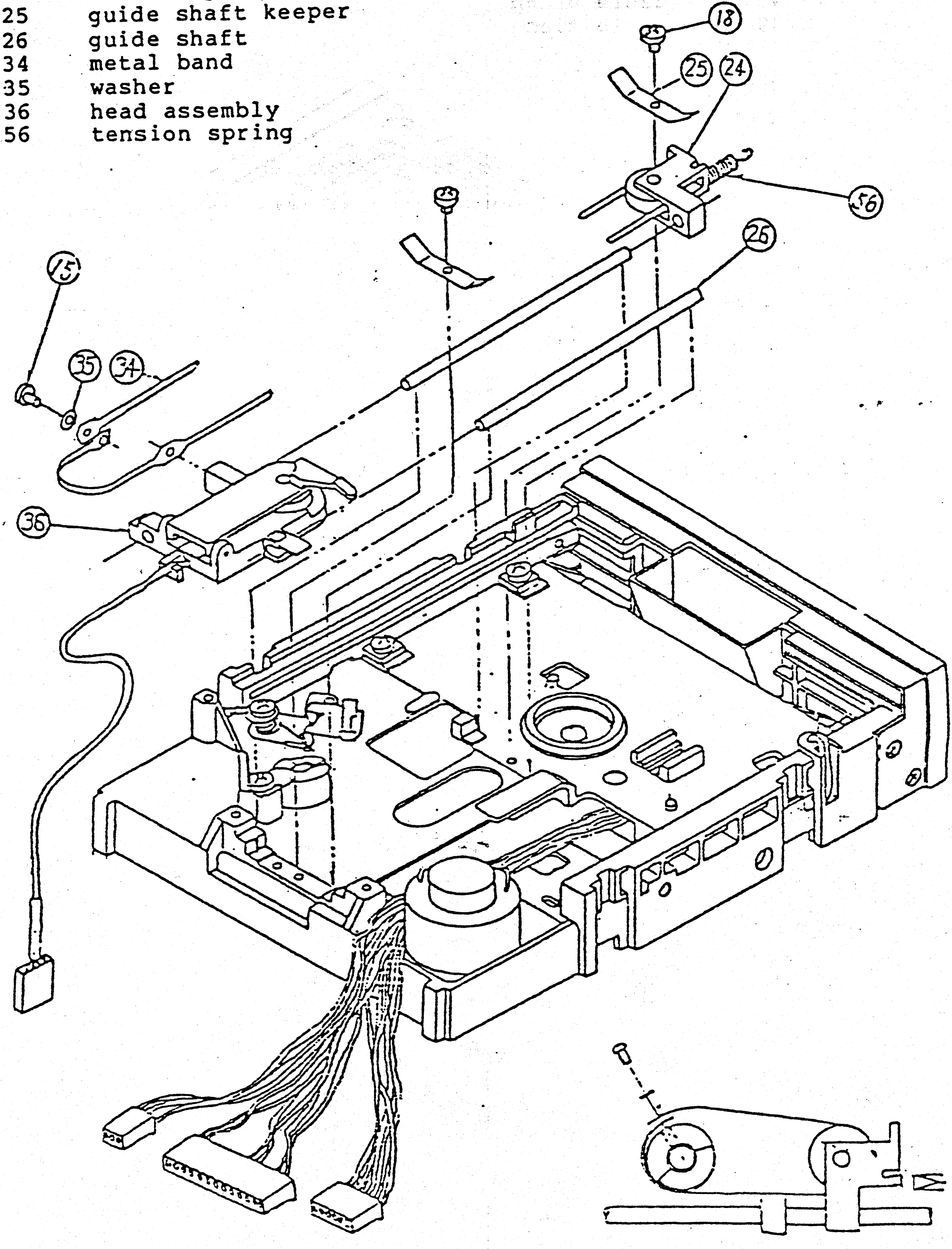

18
25
24
56
26
15
35
34
36

FIG 8

Part	Description
20	binder screw
45	cable clamp
49	cable ties

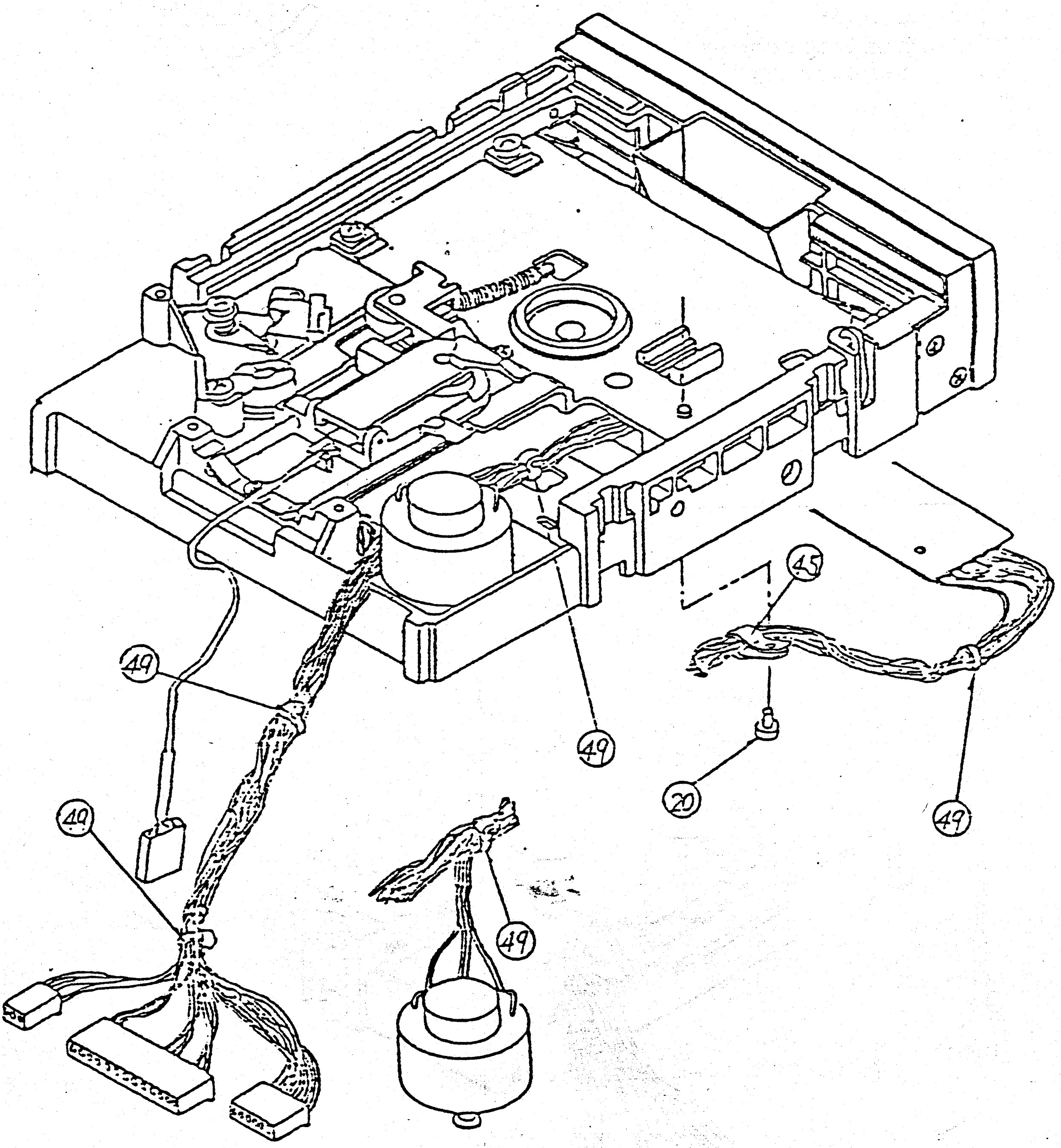
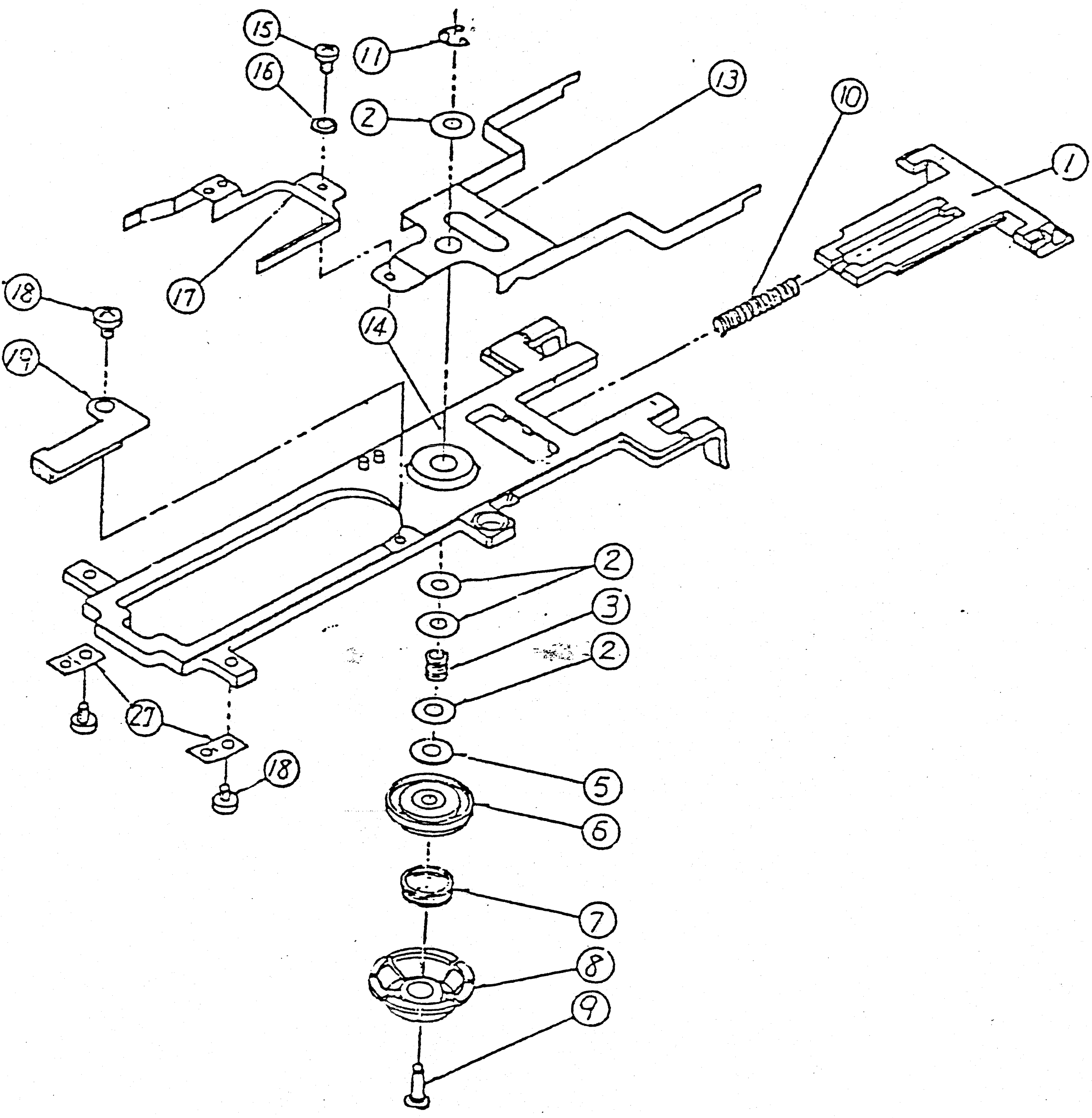

45
49
49
49
20
49
49

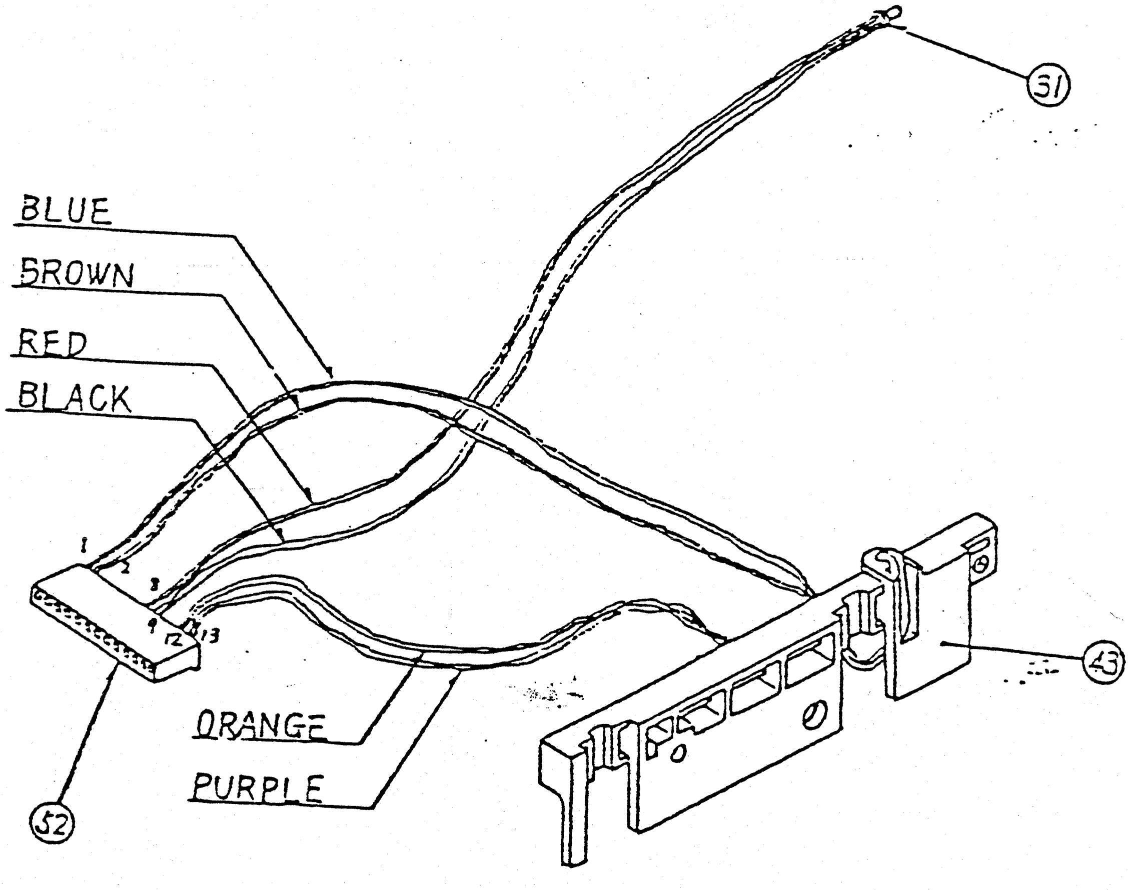
FIG 9

Part	Description	Part	Description
1	door assembly	13	hub support
2	collar	14	hub frame
3	clamp spring	15	binder screw
5	thrust washer	16	spring washer
6	collet assembly	17	arm support assembly
7	hub spring	18	binder screw
8	hub	19	pad plate assembly
9	hub shaft	27	hinge spring
10	door spring	60	collet
11	E-washer	61	collet bearing


15
11
16
2
13
10
1
17
14
18
19
2
3
2
27
18
5
6
7
8
9

2.3.8 FIG. 4, Diskette guide, LED assembly and connector housing.

Part	Description
31	LED assembly
43	diskette guide
52	connector housing



31
BLUE
BROWN
RED
BLACK
1
2
3
9
12
13
43
ORANGE
PURPLE
52

2.3.9 Secure the D.C. motor from the reverse side of the housing assembly with two screws.

2.3.10 Put the motor control PCB into hole 'A' and serure it with two screws.

2.3.11 Secure the stepping motor with two screws.

2.3.12 Secure the carraiage stopper with a screw.

2.3.13 Install the connector housing '52' into the hole 'B' and remove through hole 'C'.

2.3.14 Sercure the two diskette guides '21' and '43' with two screws each.

2.3.15 Install the LED holder in the front panel.

2.3.16 Insert the LED assembly into the LED holder ring.

2.3.17 Install the led into the LED holder, then push the LED holder ring onto the LED holder.

2.3.18 Attach the front panel with four flush screws.

2.3.19 Secure the eject plate with a screw.

2.3.20 Wind the metal band around the tension pulley.

2.3.21 Insert the guide shafts into the head assembly. Install the tension pullet as shown in figure 8

2.3.22 Secure the guide shaft keepers by two screws each.

2.3.23 Wind the metal band around the stepper pulley and secure it with a screw to the stepper motor pulley.

2.3.24 Hook the spring to the tension pulley and install unit in the slot in the housing assembly.

2.3.25 Hook the opposite end of the spring to the housing assembly.

2.3.26 Fasten cable ties to the cables.

2.3.27 Secure the cable clamp with a screw as shown in FIG 8.

2.3.28 Secure the arm support assembly with a screw to the hub support.

2.3.29 Insert the hub shaft into the hub, the hub spring, the collet assy, the thrust washer, the collar, the clamp spring and two collars.

2.3.30 Insert the hub shaft into the frame and the hub support and fasten it at the E-washer.

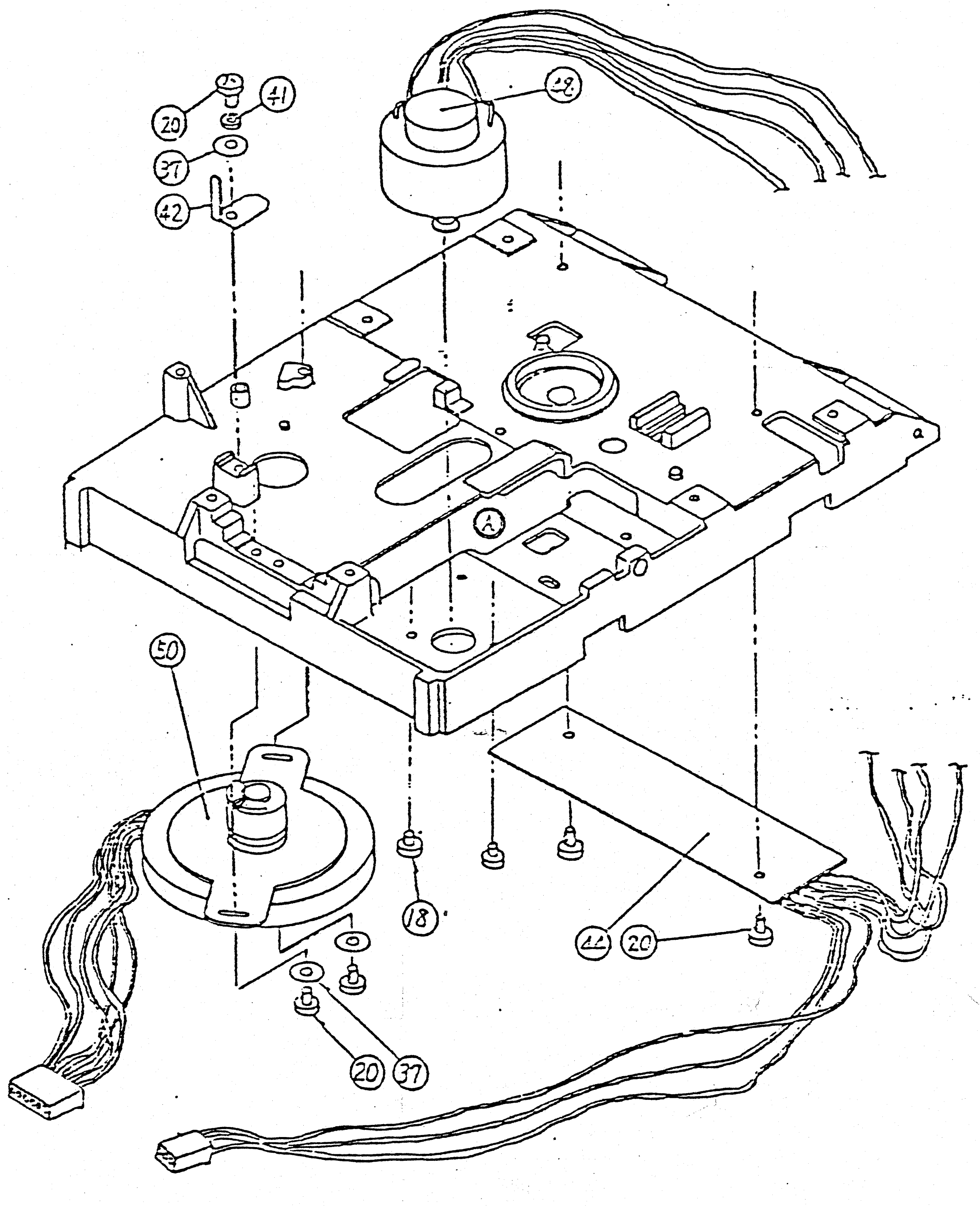
2.3.31 Set the door assembly and the door spring at the hub frame.

2.3.32 Secure the pad plate assembly with a srew to the frame at the location shown in FIG 9

2.3.33 Secure the two hinge springs with two srews each.

FIG. 5

Part	Description
18	binder screw
20	binder screw
37	washer
41	spring washer
42	carriage stopper
44	motor control PCB
50	stepping motor assembly

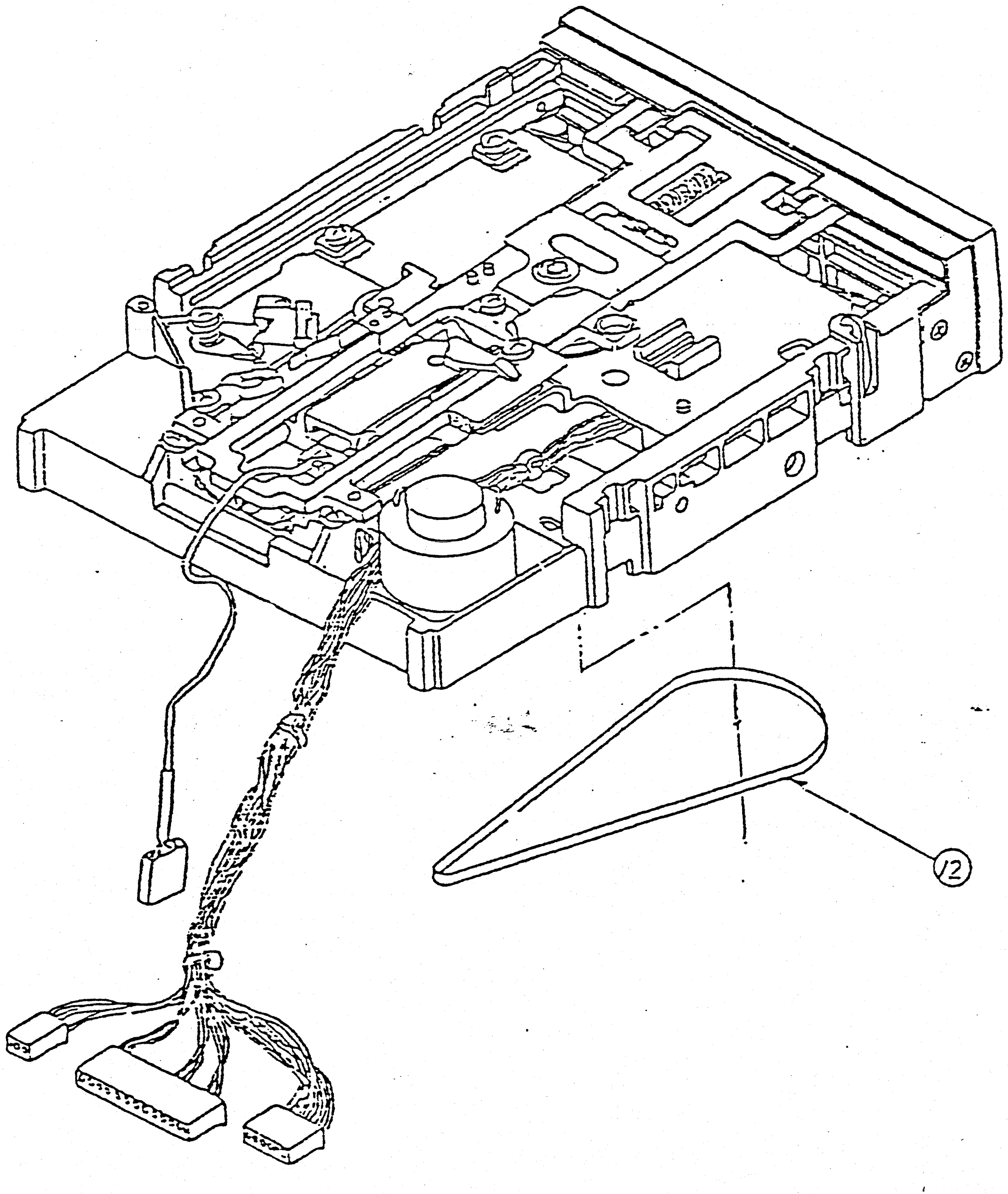

20
41
37
42
A
50
18
44
20
20
37

2.3.36 Place the belt over the D.C. motor pulley and partially on the spindle pulley.

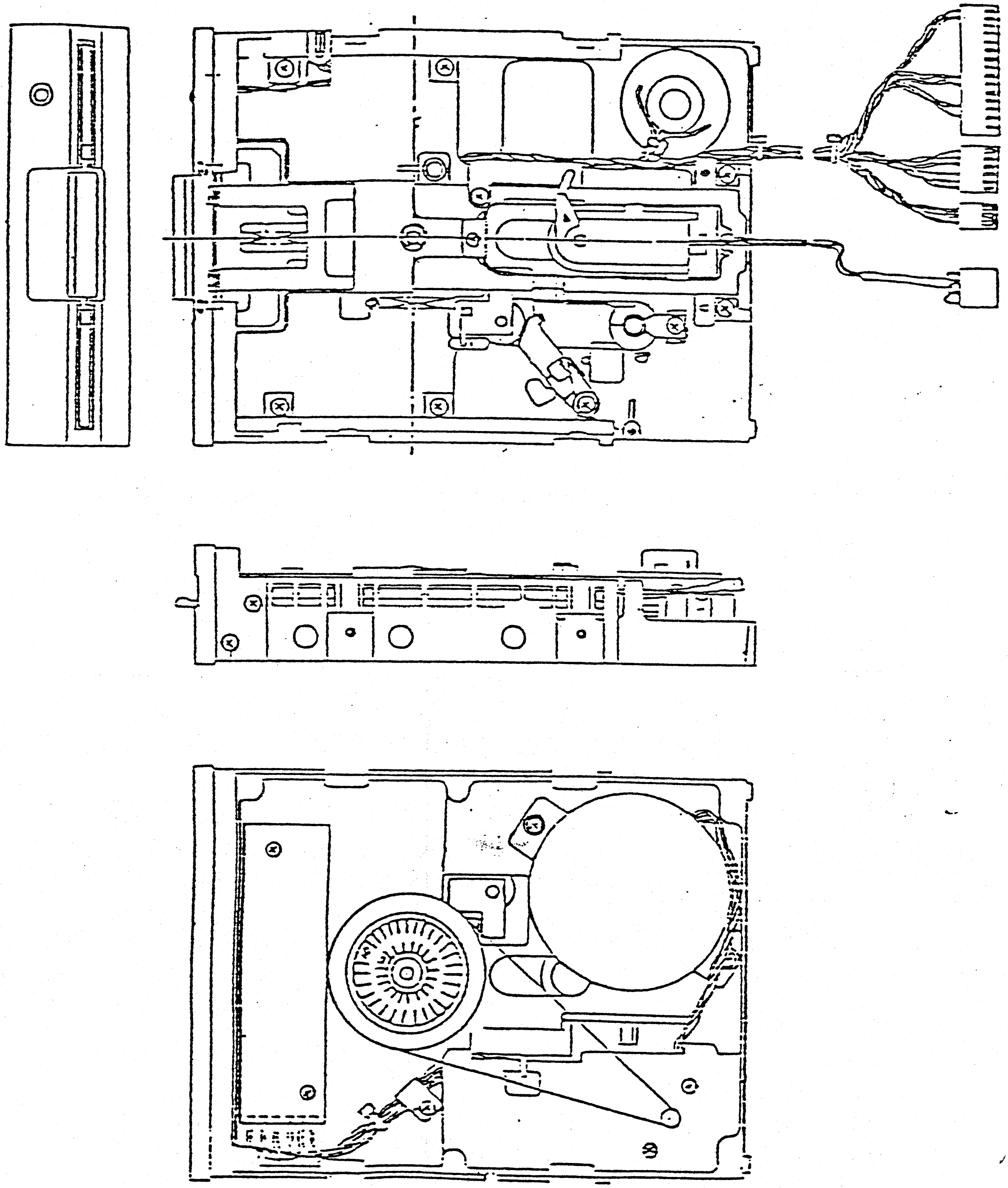
2.3.37 By turning the spindle pulley the rest of the belt will seat completely on the pulley.

2.3.38 FIG 10

Part	Description
12	drive belt



2.3.39 FIG 11; Completed Drive Mechanism



Chapter Three

3.1 Description

Since the disk drive is placed under direct control of the interface and power supply, no special proceeedure is required for starting and operation.

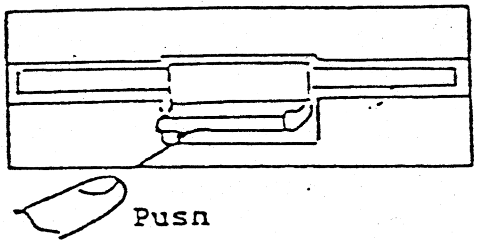
3.2 Operating procedure

Make sure that the power supply and I/O connector are connected, then insert the disk in accordance with the following procedure .

3.2.1 Inserting the media

a) Apply DC voltage to the drive.

b) Open the front door.



c) With the index hole and write protect notch being placed on the left side of the jacket, push the media in, when the media is fully inserted the loacking action can be felt.

d) Push the door downward and close the door so that it is locked firmly

3.2.2 Extracting the media

a) Open the front door. The media will pop out automatically to a position where you can extract it easily.

b) For protection of the recorded data, the media should always be stored in its envelope.

c) Close th door of the drive.

3.3 Media handling procedure

Since the media has been sudjected to awrite operation i naturally contains imformation, adequate attention must be paid to its handling.

In order to extend the life of the media and eliminate the causes of errors, it is best to take the following steps:

a) When writing something on the jacket label of the media, **do not** use a ball point pen or pencil, use felt-tipped pens.

b) **Do not** hold the edges of the media with paper clips or the like.

c) **Do not** touch the media exposed in the slot of the jacket.

d) **Do not** attempt to clean the media.

e) **Do not** keep the media in the areas where there is a strong magnetic field.

f) The diskette should be kept in its jacket.

g) Special care should be exercised so that the media is kept free from liquid, dust, metal particles, etc.

h) Take care not to exceed the following environmental conditions:

Temperature	10 to 47 °C
Relative humidity	20 to 80 %

3.4 Seek error

Few seek errors will be experienced due to the low stepping rate, less than 12 msec/track. In case of a seek error, however, recalibration of track position can be performed. This can be done by repeatedly stepping the head towards track 0 untill track 0 status is detected.

3.5 Write error

In order to check the quality of the data, perform a read-after-write operation. When data can not be read, rewrite that track and sector once again.

When data can not be read after four such operations track is defefective.

3.6 Read error

What happens quite often when performing a read operation is a soft error. A soft error is defined to be a read error which is recoverable by making ten or less read operations. However, in the event no recovery is made in ten operations, move one step from the track in the same direction as the previous step, then return one step. If this fails to read the data, this error is unrecoverable.

3.7 Description

Periodic maintenance is indispensable so that this type of peripherial equipment operates properly. It is particularly important to periodically clean the head and check the load pad. Repairs and adjustments should be made in accordance with the proceedures below.

3.8 Head Cleaning

Check for excessive dust or magnetic oxide on the load pad. With the door open (do not move upper arm greater that what is provided by opening the front door) clean head with lint free cotton cloth or 'Q-tip' in 91/ isopropyl alcohol. Wipe the head carefully to remove any dust and/or oxide.

3.9 Adjustment Procedure

In case of a malfuction or parts replacement, make the following adjustments. In order to maintain the interchangability of the media between drives it is desirable check each drive against a master alignment diskette.

3.9.1 Track adjustment (radial track)

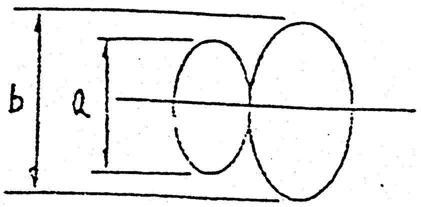
a) Connect I/O cable an restore the head to track 00.

b) Insert a 48tpi alignment diskette and close the door.

c) Connect two oscilloscope probes to pin 1 and pin 14 of UH6 (592), set oscilloscope to angbraic add at 50mV/cm and 200 msec/div.

d) Load the head and allow it to seek to track 16, check for cats eye wave form. When the cats eye lobe ratio is 70/ or less, loosen the stepping motor mounting screws, turn the stepping motor to obtain the lobe ratio of 90/ or less.

e) After allowing the head to track 34, return it to track 16 and recheck the cats eye. If the ratio is correct tighten the stepping motor screws.

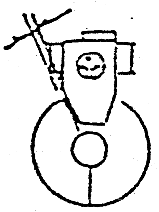


$$\frac{a}{b} \times 100 \geqq 70$$

Cats eye lobe ratio

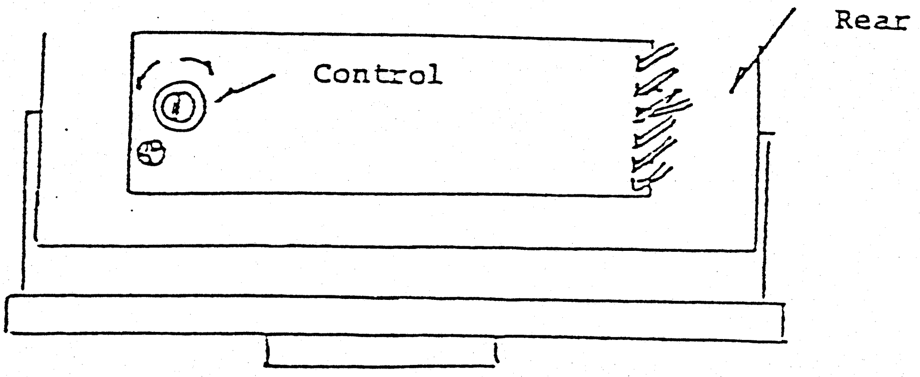
3.9.2 Track 00 adjustment

The drive is not provided with a track 00 sensor. To adjust, let the head over step in the track 00 direction and adjust the liniter postion to obtain a clearance less than 0.25mm - 0.4mm.



3.9.3 Speed control

Turn the variable resistor on the motor control board untill th tachometer disk on the spindle pulley appears stationary when viewed with a fluorescent lamp.



3.10 Limiter Adjustment Procedure

(1) Set the CPU to permit ARY-03 to execute.

(2) Connect the drive to the equipment body (1541).

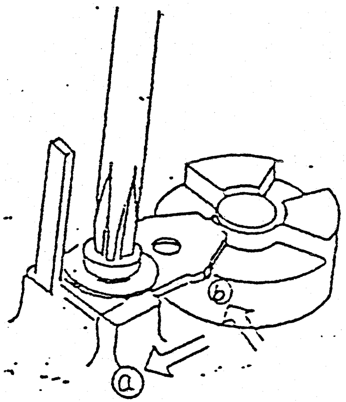
(3) Switch ON the power to the equipment and insert a medium (dummy) into the drive and close the door.

(4) Press $\boxed{\text{A}}$ and $\boxed{\text{RET}}$ keys.

(5) Loosen the limiter screw a 1/4 turn, counterclockwise, position the limiter as instructed below, then retighten the screw.

① Move the limiter in ⓐ ⇨ direction until is stops.

② Next, move it 0.25 to 0.4mm in ⓑ ⇨ direction.



Hold the limiter using a screwdriver as a lever so that the limiter does not rotate togehter with the screw when it is tightened. (Be careful not to damage the steel belt with the screwdriver.) As a criterion for screw tightening, the screw should not move when a torque of 5 kg-cm is applied to it.

(6) Press [R] key and check the clearance. (Clearance_____)

(7) Press [D] key and check the sound.

* Sound checking method: Shall be the same evaluation
method as that when making
a bump test.

(8) Check the clearance.

* A 0.25-mm clearance gage shall be inserted into the clearance and a 0.4mm clearance gage shall be not inseterted.

When OK: Press [RET] key.

When NG: Press [N] and [RET] key.
Retry beginning (4).

(9) Press [SP] key.

* Visually confirm that the pulley moves towards the 1TK OUTER side and contacts the limiter.

When OK: Press [RET] key.

When NG: Press [N] and [RET] key.
Retry beginning (4).

(10) Press [SP] key.

* Visually confirm that the limiter does not move towards the outer side.

When OK: Press [RET] key.

When NG: Press [N] and [RET] key.

Retry beginning (4).

(11) Remove the medium and switch OFF the power (1541 side only).

(12) Disconnect the connector.

(10) Press [SP] key.

* Visually confirm that the limiter does not move towards the outer side.

When OK: Press [RET] key.

When NG: Press [N] and [RET] key.

Retry beginning (4).

(11) Remove the medium and switch OFF the power (1541 side only).

(12) Disconnect the connector.

3.11 DIAG TEST(BURN-IN) Procedure

3.11.1 Instrument for this test

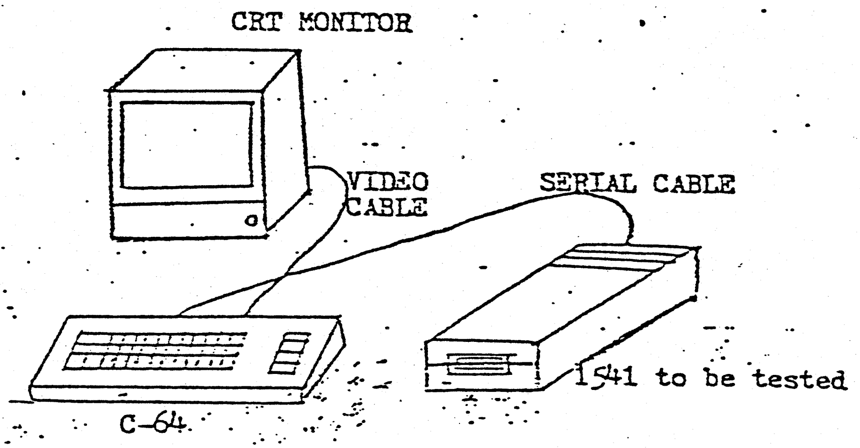
Computer : C-64

CRT Monitor : 1510 or 1701 or the equivalent

Floppy Disk : 1541

PRG.Diskette : "DIAG" Diskette

3.11.2 Connection



3.11.3 Procedure

(1) After setting the PRG diskette in to 1541 press keys as follows:

LOAD "DIAG*", 8

After the display of "READY" press key – R U N RETURN

After the following appears on the screen, pull out the PRG dislette and store it.

Screen 1

```
CONNECT TEST DISK

   TURN ON

PRESS F1 WHEN READY
```

(2) The following appeass approx. 20 seconds after F1 key is pressed when the disket is not set. Confirm that the red LED lmap of the test floppy disk is blinking.

Screen 2

```
1541  DIAG START

   SEE    LED

   LED BLINK ?

   YES=PRESS F1

   NO =PRESS F3
```

(3) After Confirmation of the LED lamp the following appears when F1 key is pressed. Remove the Serial cable from the floppy disk and set the floppy disk to be tested next. The screen 1 will be displayed after F1 key is pressed again.

Screen3

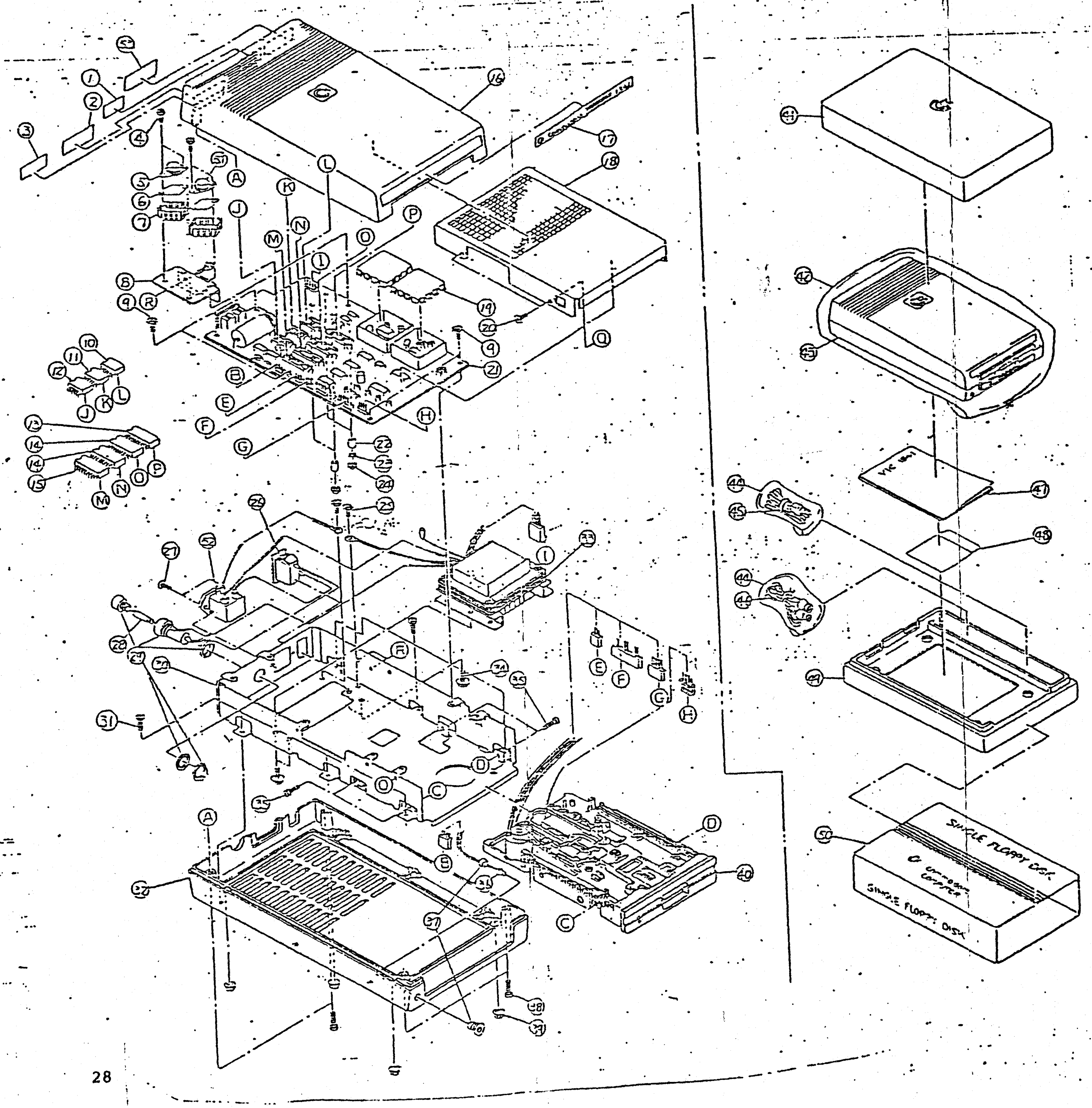
```
REMOVE SERIAL CABLE

CONTINURE DIAG TEST?

    YES=PRESS F1

     NO=PRESS F3
```

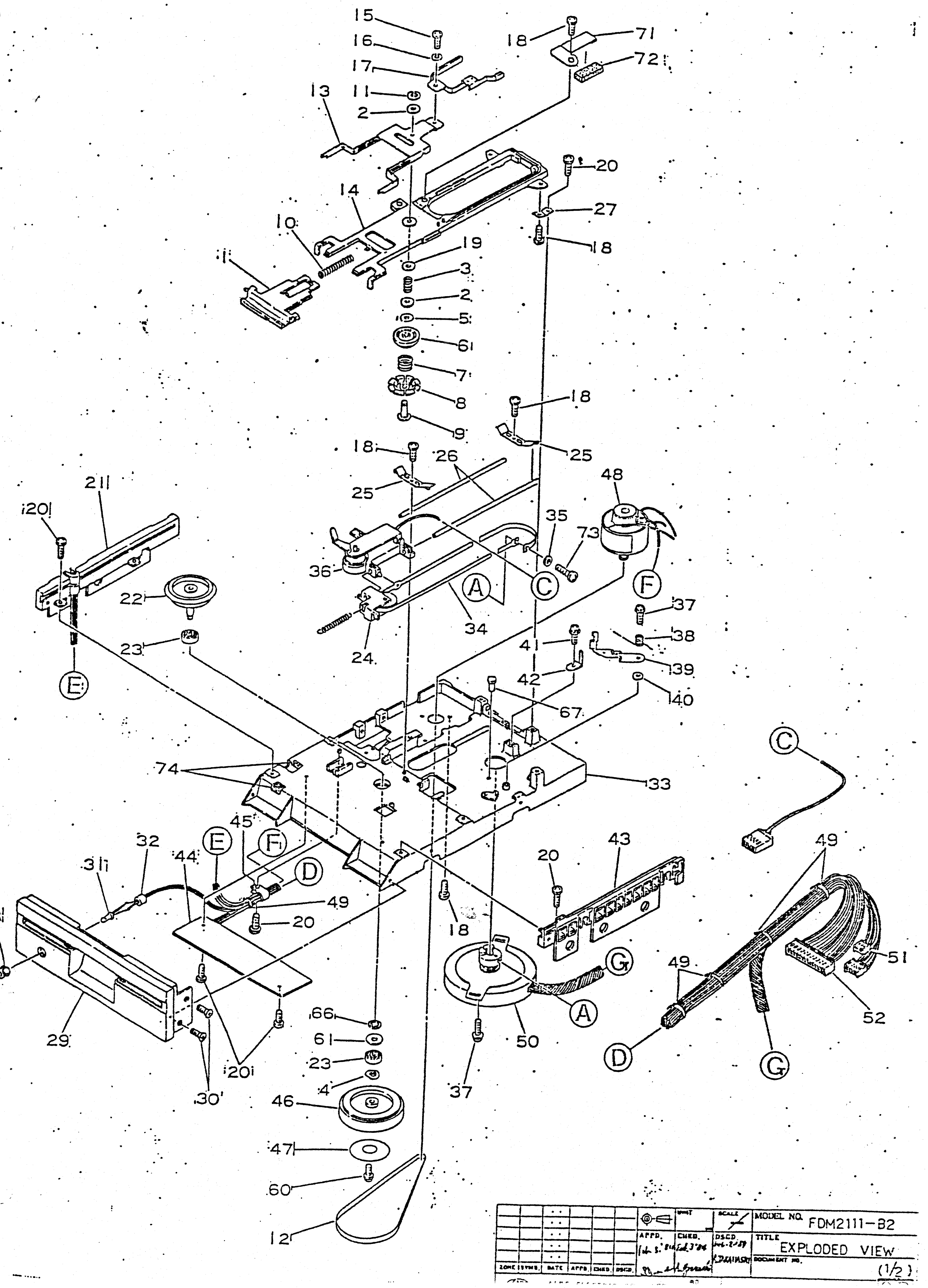
(4) Under the following burn-in condition the floppy disk whose LED lamp blinks by the above procedure. The floppy disk is qualified when the LED lamp still blinks in the same way after the burn-in.

3.11.2 PARTS LIST FOR 1541

No.	Name	P/No.	Q'ty
1	Rating Label	1540030-01	1
2	Warning Label	1010019-01	1
3	FCC ID Label	320955-02	1
4	Screw with Ext. Tooth Metric, M3	325541-05	4
5	Voltage Regulator	901528-04	1
6	Insulation Mylar	904914	2
7	Heat Sink	1540011	2
8	Heat Sink	1540011	1
9	Screw with Ext. Tooth Metric, M3	325541-02	7
10	ROM	901229-03	1
11	ROM	325302-01	1
12	RAM	325502-03	1
13	CPU	901435-01	1
14	VIA	901437-01	2
15	Logic Array	325572-01	1
16	Top Case Assy	251185	1
17	Plate Model	1540052	1
18	Shield Cover	1540013	1
19	Shield Cap	4022047	2
20	Screw with Ext. Tooth Metric, M3	325541-02	2
21	PCB Assy	1540048-01	(1)
22	Tubing Insulation	905477-02	4
23	Lock Washer, External Toothed Metric	905655-03	2
24	Nut	905960-03	4
25	Screw with Ext. Tooth Metric, M4	325542-02	2
26	Switch Seesaw	904509-01	1
27	Screw Flat Head	906803-02	2
28	Fuse Slo Blo		1
29	Fuse Holder		1
30	Power Chassis	251153	1
31	Tapping Screw	906883-03	6
32	Bottom Case	1540015	1
33	Power Transformer	1540009-	1
34	Screw Metric, M5	325548-04	4

No.	Name	P/No.	Q'ty
35	Inch Pan Head Screw	906610-03	4
36	LED Assy	1540003-02	1
37	Lamp Holder Set	903820-01	1
38	Pan Head Screw	906800-02	4
39	Foot Self Adjesive	950150-01	4
40	Drive Mechanism	325519-02	1
41	Styrofoam Top	1540019	1
42	Poly Bag	1540025	1
43	Main Assy	1540005-06	(1)
44	Poly Bag	4022044-02	2
45	Power Cord	[illegible]	1
46	Cable, 6P DIN	1540027-01	1
47	User Manual	1540031-02	1
48	Diskette Demo	1540024-02-ZX	1
49	Styrofoam Bottom	1540020	1
50	Inner Carton	1540032-01	1
51	Voltage Regulator	901528-03	1
52	Power Conncetor		1
53	Label, FCC Class B	325553	1


SINGLE FLOPPY DISK
commodore
SINGLE FLOPPY DISK
VIC 1541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UNIT

SCALE

MODEL NO. FDM2111-B2

APPD. Feb. 3 '84

CHKD. Feb. 3 '84

DSGD. Feb. 2 '84

TITLE EXPLODED VIEW

DOCUMENT NO.

(1/2)

ZONE SYMB. DATE APPD. CHKD. DSGD.

NO.	PART NO.	NAME	NO.	PART NO.	NAME	NO.	PART NO.	NAME
1	BH117-A	Door Assy.	25	HY616	Guide Shaft Keeper	49	GR123	Band
2	HY623	Collar	26	EY142	Guide Shaft	50	QY145-A	Stepper Assy.
3	WS114	Clamp Spring	27	HY712	Hinge Spring	51	BG126	Connector Housing
4	GW115	Wave Washer	28	BG111	LED Holder	52	BG127	Connector Housing
5	GW114	Thrust Washer	29	BH127	Front Panel	53	—	—
6	BJ122-A	Collet Assy.	30	2A121064	Screw	54	—	—
7	WS142	Hub Spring	31	DE111-AA	LED Assy.	55	—	—
8	BJ112	Hub	32	BG211	LED Holder Ring	56	—	—
9	EY114	Hub Shaft	33	VY119	Housing	57	—	—
10	WS171	Door Spring	34	GR134	Steel Belt	58	—	—
11	2L003001	E-Washer	35	GW118	Washer	59	—	—
12	GR111	Drive Belt	36	QY124-C	Head Assy.	60	2A271030	Screw
13	HY581	Hub Support	37	2A331050	Screw	61	2LFD0011	Washer
14	FY117	Hub Frame	38	WS157	Eject Spring	62	—	—
15	2A151040	Screw	39	HY532-A	Eject Assy.	63	—	—
16	2G102602	Washer	40	GW123	Poly Slider	64	—	—
17	HY582-A	Arm Support Assy.	41	2A341060	Screw	65	—	—
18	2A132040	Screw	42	HY551	Carriage Stopper	66	2M313001	C-Washer
19	HY625	Collar	43	BG262-A	Disk Guide-R Assy.	67	GP114	Eject Pin
20	2A131050	Screw	44	PM117AB	Motor Control P.C.B	68	—	—
21	BG261-AH	Disk Guide-L Assy.	45	GR152	Cord Holder	69	—	—
22	EY182	Spindle Unit	46	UP512	Spindle Pulley	70	—	—
23	GU127	Spindle Bearing	47	GT111	Tacho Disk	71	JS482	Pad Holder
24	UP533-A	Tension Pulley Assy.	48	QY112	D.C Motor	72	GS112	Pressure Pad
						73	2A151030	Screw
						74	GS117	Pad

ZONE | SYMB. | DATE | DSGD
UNIT
SCALE
APPD. Feb 5 '84
CHKD. Feb 2 '84
DSGD. Feb 2 '84 A.TAKAHASHI
MODEL NO. FDM2111 -B2
TITLE EXPLODED VIEW
DOCUMENT NO. (2/2)

PART NO.	DESCRIPTION
250448-01	PCB ASSY, 1541B

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVE
1		PRELIMINARY RELEASE	8/15/84	S. Katayama
2		REVISED	8/29/84	S. Katayama
3		REVISED	9/15/89	S. Katayama
4		REVISED	11/28/84	S. Katayama
5		ADD ITEM 101 (INSULATION SPACE SHEET)	12/19/84	S. Katayama
6		REVISED	1/11/85	T. Tsukuda
7		REVISED PER ECO 90012	1-22-85	
8		REVISED PER ECO 90018	1-28-85	
9		REVISED PER ECO 860080	2-3-86	N. Yoshim
10		PILOT PRODUCTION RELEASE	3-7-86	N. Y

3. THE COMBINATION OTHER THAN THE FOLLOWING IS NOT ACCEPTED :
   F.D.D. BY NEWTRONICS :
   P/NO. 251643-03 OR P/NO. 251643-01
   HYBRID-IC : P/NO. 251853-02
   ROM (EP-ROM) : P/NO. 251968-01
   J3 : SHORT

2. THIS 1541B PILOT PRODUCTION RELEASE IS APPLIED UNTIL THE STOCK OF F.D.D. BY NEWTRONICS (P/NO. 251643-03, -01) IS CLEARED.

1. SHEET 5 OF 5 SIZE B
   ASSY DWG

NOTES-UNLESS OTHERWISE SPECIFIED :

commodore	TITLE : PCB ASSY, 1541 B	DRAWN BY : N. Hanamura	DATE 8-15-84	ENGR :	DATE 8-15-84	SIZE B	DRAWING NUMBER 250448
		CHKD	8-15-84	APPR :			SHEET

PART/DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	1						
REF	2	D	251852-01	SCHEMATIC DIAGRAM, 1541B			
	3						
1	4	B	251854-01	PCB, 1541B			
	5						
	6						
1	7	B	901435-01	IC, MPS 6502 CPU	UC2		
2	8	B	901437-01	IC, 6522 VIA	UC1, 3		
	9						
1	10	B	251968-01	IC, 27128 EP ROM	UA2		
1	11	B	325502-03	IC, TMM2016P S-RAM	UA3		
	12						
	13						
1	14	B	251828-01	IC, GATE ARRAY 40PIN	UC4		
1	15	B	251829-01	IC, GATE ARRAY 20PIN	UC5		
S	16	B	251828-02	IC, GATE ARRAY 42PIN	UC4		SUBSTITUTE FOR ITEM 14.
	17						
	18						
1	19	D	251853-02	IC, HYBRID READ AMP/WRITE	UD1		
	20						
2	21	B	901522-06	IC, 7406	UA1, UC6		
1	22	B	901521-30	IC, 74LS14	UB1		
	23						
S	24	B	901521-73	IC, 74LS06	UA1, UC6		SUBSTITUTE FOR ITEM 21.
1	25		902720-01	TRANSISTOR 2SA673	Q2		
2	26		902671-01	2SC945	Q3, 5		
S	27		902693-01	2SC1815	Q3, 5		SUBSTITUTE FOR ITEM 26.
S	28		902693-03	TRANSISTOR 2SC1740	Q3, 5		SUBSTITUTE FOR ITEM 26.
2	29		900756-01	DIODE RECTIFIER, FULL WAVE BRIDGE 1.5A 50V	CR1, 2		KBP-005
6	30		900750-02	RECTIFIER 1N4002	CR3, 4		(11, 12, 13, 14) SEE NOTE $\boxed{2}$
2	31		900850-01	1N4148	CR6, 7		
1	32		325505-02	ZENER 3.3V 500MW	CR5		
S	33		325505-03		CR5		SUBSTITUTE FOR ITEM 32.
S	34	B	900948-06	DIODE, ZENER 3.3V 500MW	CR5		SUBSTITUTE FOR ITEM 32.
	35						
	36						
	37						
	38						

commodore	TITLE: PCB ASSY, 1541B	DRAWN BY: N. Hanamura DATE 8-13-84 CHKD DATE 8-15-84	ENGR: DATE 8-15-84 APPR:	SIZE B	DRAWING NUMBER 250448 SHEET 2 OF 5 REV 10

E15 1000-8307

QUANTITY REQD PER PART/DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
3	77	B	901550-53	RESISTOR, CARBON 2KΩ 1/4W 5%	R23,24,25		
2	78		-23	2.7KΩ	R20,21		
2	79		-17	1.2KΩ	R5,7		
2	80		-20	10KΩ	R13,27		
1	81		-74	82Ω	R2		
2	82		-16	150KΩ	R9,22		
3	83		-22	47KΩ	R6,8,16		
2	84	B	901550-78	RESISTOR, CARBON 3.6KΩ 1/4W 5%	R29,30		
	85						
	86						
1	87	B	251747-01	HEATSINK			
A/R	88	B	904907-01	HEATSINK COMPOUND THERM. CONDUCTIVE			
	89						
	90						
	91						
4	92	B	325541-05	SCREW M3x12 PAN HEAD/EXT TOOTH WASHER	--		
2	93	B	905655-03	LOCK WASHER M3 EXTERNAL TOOTHED			
4	94	B	905960-03	NUT, HEXAGON M3			
	95						
1	96	B	325563-01	FERRITE BEAD	FB1		
	97						
1	98	B	200018-13	JUMPER WIRE,	CR10		12.5MM
	99						
1	100	C	251927-01	SHIELD PLATE, BOTTOM			
1	101	B	251973-01	INSULATION SHEET, 1551			
	102						
2	103	B	252056-01	INSULATION TAPE, W5			
	104						
	105						
	106						
	107						
	108						
	109						
	110						
	111						
	112						
	113						
	114						

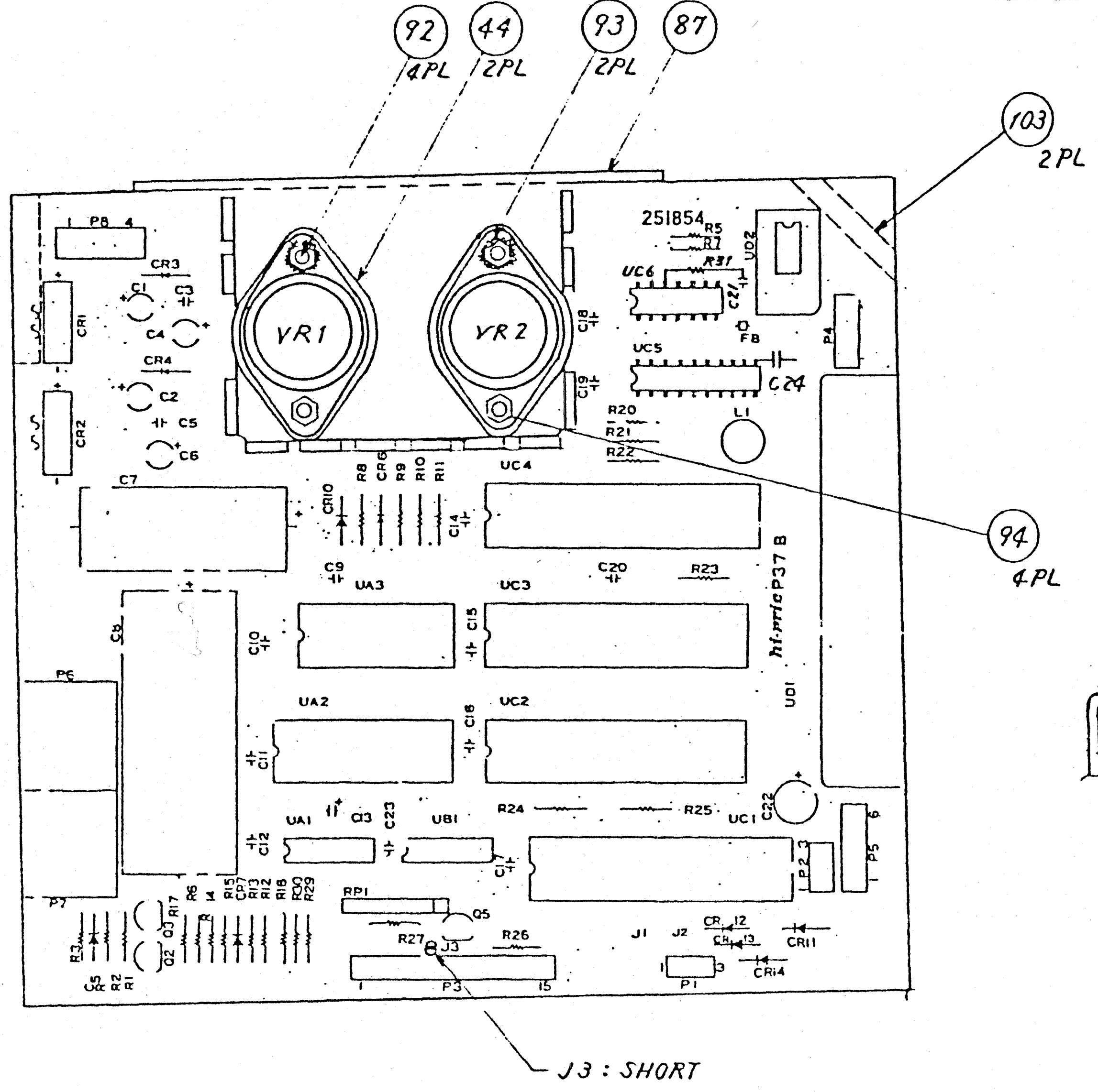
commodore

TITLE: PCB ASSY 1541 B

DRAWN BY: N. [illegible]
DATE: 8-15-85
CHKD: [illegible]
ENGR: [illegible]
DATE: 8-15-85
SIZE: B
DRAWING NUMBER: 250448
REV

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		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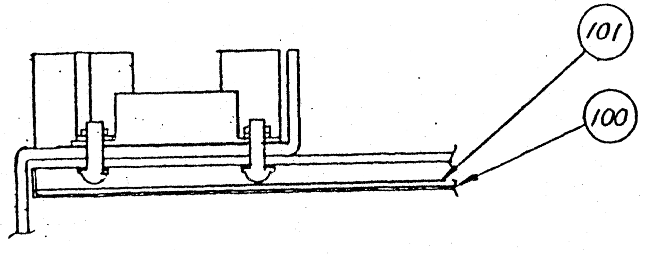
4PL
44
2PL
93
2PL
87
103
2PL
94
4PL
251854
R5
R7
R31
UC6
C21
UD2
FB
UC5
C24
P4
P8
CR3
C1
C3
C4
CR1
CR4
C2
C5
C6
CR2
VR1
VR2
C18
C19
R20
R21
R22
L1
C7
CR10
R8
CR6
R9
R10
R11
C14
UC4
C9
UA3
C20
R23
UC3
hi-pri-c P37 B
C8
C10
C15
UD1
P6
UA2
C11
C16
UC2
UA1
C13
C23
UB1
R24
R25
UC1
C22
C12
C17
P2
P5
P7
R17
R6
R4
R15
CR7
R13
R18
R30
R29
RP1
Q5
R27
J3
R26
J1
J2
CR12
CR13
CR11
R3
Q3
Q2
R5
R2
R1
P3
1
15
P1
CR14
J3 : SHORT



DETAIL

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS			∠'S
.X	.XX	.XXX	
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MATERIAL

FINISH

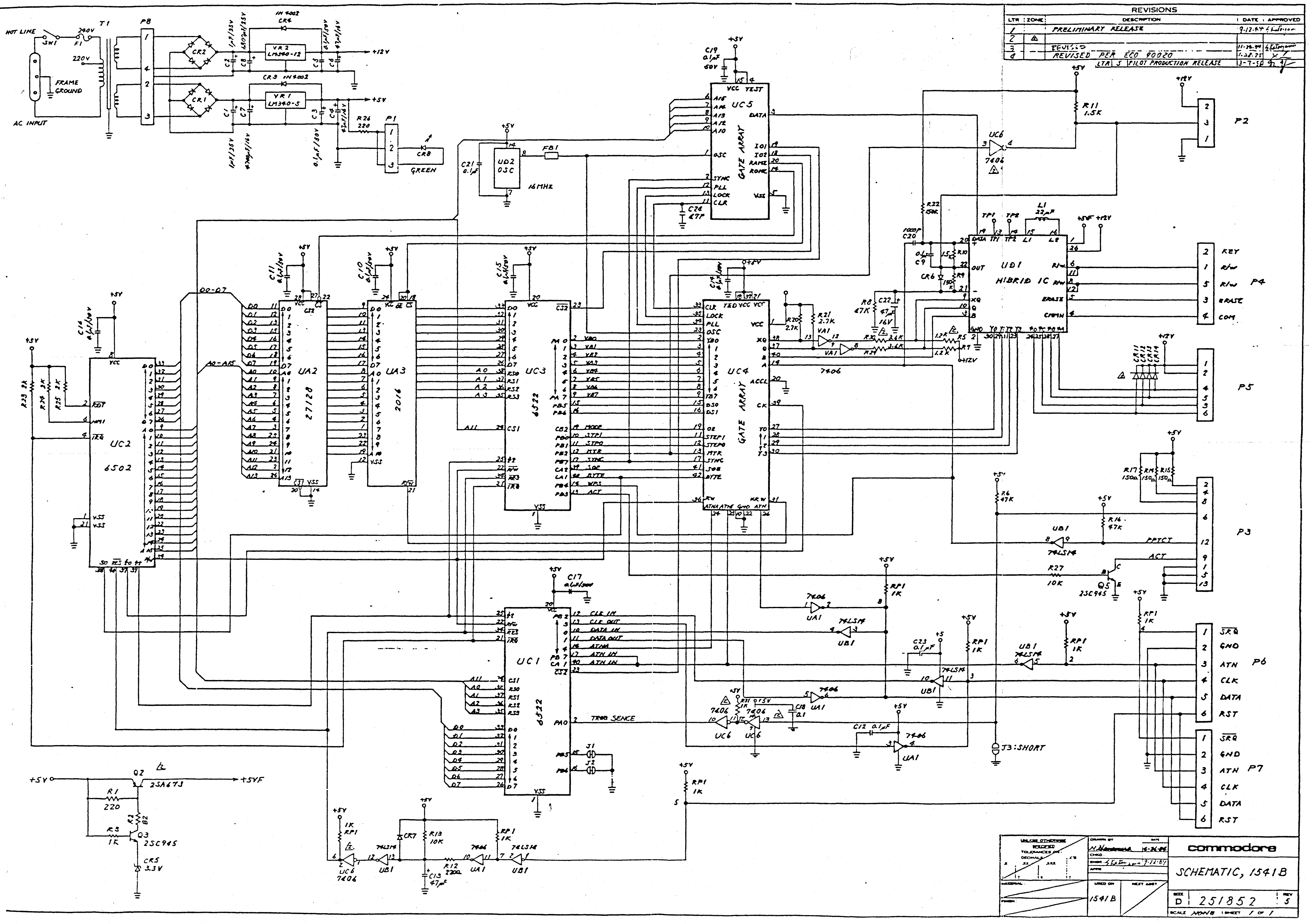
DRAWN BY:	DATE
	11-24-84
CHKD:	
ENGR:	11-24-84
APPR:	

USED ON	NEXT ASSY

commodore

PCB ASSY,
1541B

SIZE		REV
B	250448	10
SCALE NONE	SHEET 5 OF 5	


HOT LINE
SW1
F1
240V
220V
T1
FRAME GROUND
AC INPUT
P8
CR2
CR1
CR4 1N4002
CR3 1N4002
VR2 LM340-12
VR1 LM340-5
+12V
+5V
R26 220
P1
CR8
GREEN
UC5
GATE ARRAY
UD2 OSC
16MHZ
FB1
UC6 7406
R11 1.5K
P2
UD1
HIBRID IC
KEY
R/W
ERASE
COM
P4
P5
P3
PPTCT
ACT
Q5 2SC945
R27 10K
UC2
6502
UA2
27128
UA3
2016
UC3
6522
UC4
GATE ARRAY
UC1
6522
TRK0 SENCE
J3:SHORT
SRQ
GND
ATN
CLK
DATA
RST
P6
P7
Q2 2SA673
+5VF
R1 220
R2 82
R3 1K
Q3 2SC945
CR5 3.3V
CR7
R13 10K
R12 220
C13 47μF
UA1
UB1
74LS14
7406
L1 22μF
CLK IN
CLK OUT
DATA IN
DATA OUT
ATNA
ATN IN

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
1		PRELIMINARY RELEASE	9-12-84	
2	△			
3		REVISED	11-28-84	
4		REVISED PER ECO 90020	1-28-85	
LTR 5		PILOT PRODUCTION RELEASE	3-7-85	

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X .XX .XXX
MATERIAL
FINISH

DRAWN BY N. Hasegawa DATE 10-26-84
CHKD
ENGR S. Katayama 9-12-84
APPR

USED ON 1541B
NEXT ASSY

commodore

SCHEMATIC, 1541B

SIZE D 251852 REV 5
SCALE NONE SHEET 1 OF 1

PART NO.	DESCRIPTION
1540048-01	PCB ASSY. VIC-1541. FCC (UL) USED LOGIC ARRAY.
1540048-02	PCB ASSY. VIC-1541. USED LOGIC ARRAY.

(Fold Here)

DWG. NO. 1540048

TITLE: PCB ASSY. VIC-1541.

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	12/12/82	T. MATSUMOTO
B		REVISED PER ECO 830085	2/28/83	
C		REVISED PER ECO 830125	3/25/83	
D		REVISED PER ECO 830257	6/21/83	
E		REVISED PER ECO 830368	8/1/83	
F		REVISED PER ECO 830379	8-9-83	
G		REVISED PER ECO 830410	9-27-83	
H		REVISED PER ECO 830423	10-13-83	
J		REVISED PER ECO 830531	12-29-83	

1. SHEET 7 TO 10 OF 10 SIZE B
ASSY DWG

NOTES-UNLESS OTHERWISE SPECIFIED:

commodore	DRAWN BY T. Tokudo	DATE 11/16/82	ENGR	12/17/82	SIZE B
	CHKD		APPR: T. MATSUMOTO	12/18/82	SHEET 1 OF 10

QUANTITY REQD PER PART / DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
1	1	1	B	1540050	P C BOARD 238 x155 x1.6t			GLASS EPOXY. G-10
		2						
		3						
		4						
	REF	5	C	1540049-01	SCHEMATIC DIAGRAM			USED LOGIC ARRAY. FCC (UL)
REF		6	C	1540049-02	SCHEMATIC DIAGRAM			USED LOGIC ARRAY.
		7						
		8						
		9						
		10						
		11						
1	1	12	B	901435-01	IC MPS 6502 CPU	UC4		
2	2	13		901437-01	MPS 6522 VIA	UC2, UC3		
1	1	14		901229-03	2364-197 ROM	UB4		$E000 ~ $FFFF
1	1	15		325302-01	2364-130 ROM	UB3		$C000 ~ $DFFF
1	1	16		325572-01	LOGIC ARRAY 40 PIN DIP	UC1		
1	1	17		901521-01	74LS00 2-NAND	UC6		
1	1	18		901521-17	74LS42 DEC.	UC7		
1	1	19		901522-01	7417 BUFFER	UD2		
1	1	20		901521-32	74LS86 2-EX-OR	UD3		
2	2	21		901522-06	7406 INV. BUF.	UB1, UD1		
1	1	22		901521-02	74LS04 INV.	UC5		
1	1	23		901521-30	74LS14 SCH. INV.	UA1		
1	1	24		901521-26	74LS193 4 BIT. COU.	UE6		
1	1	25		901521-54	74LS197	UD5		
S	S	26		901522-03	74177	UD5		SUBSTITUTE FOR ITEM 25.
1	1	27		901510-01	9602	UD4		
1	1	28		901523-04	LM311	UE4		
2	2	29	B	901523-08	IC NE592	UF3, UF4		
1	1	30	B	325502-03	IC TMM2016P RAM	UB2		
S	S	31	B	325502-01	IC M58725P RAM	UB2		SUBSTITUTE FOR ITEM 30.
S	S	32	B	901522-30	IC 7407	UD2		SUBSTITUTE FOR ITEM 19.
S	S	33	B	901521-30	IC 74LS14 SCH. INV.	UC5		SUBSTITUTE FOR ITEM 22
S	S	34	B	901522-05	IC 7404 INV.	UC5		
S	S	35	B	901522-19	IC 7414 SCH. INV.	UC5		SUBSTITUTE FOR ITEM 22
		36						
		37						

commodore

TITLE:	DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
PCB ASSY. VIC-1541	T. Tokuda CHKD:	11/16/82	70 APPR: T.M	12/7 12/7	B	1540048	J	2/10

QUANTITY REQD PER PART/ DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
02	01							
2	2	38	B	902671	TRANSISTOR NPN 2SC945	Q2, Q7		
S	S	39		902693-01	2SC1815	Q2, Q7		SUBSTITUTE FOR ITEM 38.
4	4	40		902679	2SD467	Q8 - Q11		
S	S	41		902682-01	NPN 2SC2120	Q8 - Q11		SUBSTITUTE FOR ITEM 40.
1	1	42		902720	PNP 2SA673	Q1		
4	4	43		902717	2SA733	Q3 - Q6		
S	S	44		902744-01	PNP 2SA1015	Q3 - Q6		SUBSTITUTE FOR ITEM 43.
S	S	45	B	902682-02	TRANSISTOR NPN 2SC2060	Q8 - Q11		SUBSTITUTE FOR ITEM 40.
		46						
		47						
		48						
		49						
S	S	50	B	325505-03	DIODE, ZENER 3.3V 500mW ±5%	CR5		SUBSTITUTE FOR ITEM 55.
S	S	51		325506-02	, ZENER 5.1V 500mW ±5%	CR13		SUBSTITUTE FOR ITEM 58.
6	6	52		900750-02	RECTIFIER IN4002	CR2,4,8-11		
8	8	53		900850-05	SIGNAL WG713C	CR6,7,12,14-18		
S	S	54		900850-01	SIGNAL IN4148	CR6,7,12,14-18		SUBSTITUTE FOR ITEM 53.
1	1	55		325505-01	, ZENER 3.3V 500mW ±5%	CR5		HZ3C-2
S	S	56		325505-02	3.5V 500mW ±5%	CR5		HZ4A-1 SUB. FOR ITEM 55.
S	S	57		900948-06	3.3V 500mW ±5%	CR5		IN5226B SUB. FOR ITEM 55.
1	1	58		325506-01	5.1V 500mW ±5%	CR13		HZ5C-2
S	S	59		900948-11	, ZENER 5.1V 500mW ±5%	CR13		IN5231 SUB. FOR ITEM 58.
2	2	60		900756-01	, BRIDGE 1.5A 50V	CR1, CR3		KBP-005
S	S	61		900850-19	DIODE SIGNAL MA162	CR6,7,12,14-18		SUBSTITUTE FOR ITEM 53.
S	S	62		325566-06	CRYSTAL MODULE 16MHZ 100ppm	Y1		SUBSTITUTE FOR ITEM 64 (KYOCERA)
S	S	63		-07	100ppm	Y1		SUBSTITUTE FOR ITEM 64 (TOYOCOM)
1	1	64		-01	50PPM	Y1		
S	S	65	B	325566-02	CRYSTAL MODULE 16 MHz 100PPM	Y1		SUBSTITUTE FOR ITEM 64.
		66						
S	S	67	B	251188-01	COIL, INDUCTOR 2.2μH	L1		SUBSTITUTE FOR ITEM 69
S	S	68		251472-01	2.2μH	L1		SUBSTITUTE FOR ITEM 69
1	1	69		325513-01	2.2μH	L1		
2	2	70		325513-02	22μH	L9, L10		
3	3	71		325513-03	100μH	L8, L11, L12		
S	S	72		251188-02	22μH	L9, L10		SUBSTITUTE FOR ITEM 70
S	S	73		251472-02	22μH	L9, L10		SUBSTITUTE FOR ITEM 70
S	S	74	B	251188-03	COIL, INDUCTOR 100μH	L8, L11, L12		SUBSTITUTE FOR ITEM 71

commodore	TITLE: PCB ASST. VIC-1541	DRWN BY: T. Tokuda CHKD:	DATE 11/16/82	ENGR: HG APPR: T.M	DATE 12/17 12/18	SIZE B	1540048	REV .1	SHT 3/10

QUANTITY REQD PER PART / DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
1	1	75	B	901528-04	VOLTAGE REGULATOR 12V, 1.5A	VR1		LM340-12 TO-3
1	1	76	B	-03	VOLTAGE REGULATOR 5V, 1.2A	VR2		LM340-5 TO-3
S	S	77	B	901528-05	VOLTAGE REGULATOR 5V, 1A	VR2		SUBSTITUTE FOR ITEM 76
		78						
2	2	79	B	904914	INSULATION MYLAR TO-3			
S	S	80	B	325551-01	INSULATION SILICONE TO-3			SUBSTITUTE FOR ITEM 79.
		81						
		82						
2	2	83	B	903361	CONNECTOR, DIN 6P	P2, P3		
		84						
		85						
		86						
4	4	87	B	904150-06	SOCKET IC LOW PRO 40 PIN			
3	3	88	B	904150-04	SOCKET IC LOW PRO 24 PIN			
		89						
		90						
		91						
		92						
		93						
		94						
		95						
1	1	96	B	251065-04	HEADER ASSY. 2.5 PITCH 4 PIN	P8		MOLEX 5048-04AG
1	1	97		325562-06	6PIN	P7		3022-06A
1	1	98		325562-15	15PIN	P6		3022-15A
2	2	99		325562-03	2.5 PITCH 3PIN	P4, P5		3022-03A
1	1	100	B	903316-04	HEADER ASSY. 3.96 PITCH 4PIN	P1		MOLEX 5271-04A
		101						
		102						
		103						
		104						
		105						
		106						
		107						
		108						
		109						
		110						
		111						

commodore	TITLE: PCB ASSY. VIC-1541	DRWN BY: T. Tokuda CHKD:	DATE 10/11/82	ENGR: YO APPR: T.M	DATE [illegible] [illegible]	SIZE B

1540048	REV J	SHT 4/10

QUANTITY REQD PER PART/ DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
1	1	149	B	901751-43	RESISTOR METAL OXIDE ¼W ±1% 91Ω	R51		
1	1	150	↕	↕ -18	↕ 100Ω	R28		
1	1	151	↕	↕ -44	↕ 150Ω	R29		
2	2	152	B	901751-45	RESISTOR METAL OXIDE ¼W ±1% 9.1kΩ	R53, R54		
		153						
		154						
		155						
		156						
		157						
10	10	158	B	325563-01	FERRITE BEAD	L2-7,13-16		
S	S	159	B	903025-01	FERRITE BEAD	L2-7,13-16		SUBSTITUTE FOR ITEM 158.
		160						
		161						
		162						
	2	163	B	4022048	SHIELD BOX			
	2	164	B	4022047	SHIELD CAP			
2	2	165	B	1540023	HEAT SINK TO-3			
1	1	166	B	1540011	HEAT SINK REGULATOR			
N/R	N/R	167		904907-01	COMPOUND THER FOR HEAT SINK			
		168						
		169						
		170						
		171						
4	4	172	B	325541-05	SCREW PAN HEAD/EXT TOOTH WASHER M3-12			
2	2	173	B	905655-03	EXTERNAL TOOTH WASHER M3			
4	4	174	B	905960-03	NUT HEX. M3			
		175						
4	4	176	B	905477-04	TUBING, INSULATION 3.0 DIA x 7MM			USE WITH ITEM 76
S	S	177	B	905477-02	TUBING, INSULATION 3.5 DIA x 5MM			SUBSTITUTE FOR ITEM 176. USE WITH ITEM 77
		178						
2	2	179	B	905477-05	TUBING, INSULATION 0.8 DIA x 25MM			
		180						
2	2	181	B	251584-01	WRAPPING WIRE AWG 28 L=30MM			
1	1	182	↕	↕ -02	↕ L=104MM			
1	1	183	B	251584-03	WRAPPING WIRE AWG 28 L=119MM			
		184						
		185						

commodore

TITLE:	DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
PCB ASSY. VIC-1541	T. Tokuda	11/16/82	10	12/17	B	1540048	J	6/10
	CHKD:		APPR: T.M	12/18				

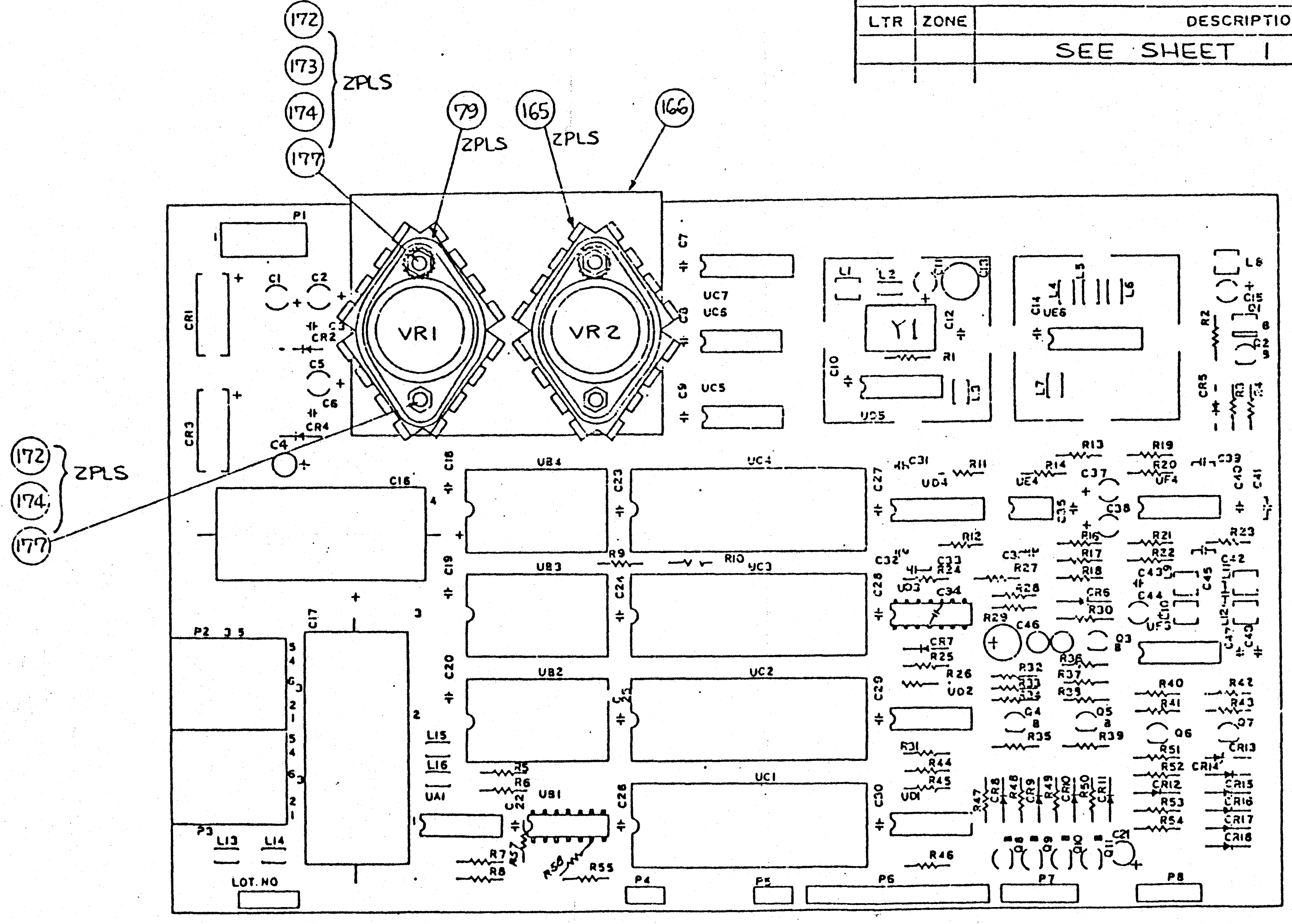
QUANTITY REQD PER PART/DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION		REF DES	BEND	NOTES
	1	112	B	900301-04	CAPACITOR ELECTROLYTIC	220μF/10V	C13		
1	1	113		900101-45		6800μF/25V	C17		
1	1	114		900101-32		4700μF/16V	C16		
2	2	115		900100-33		47μF/16V	C2, C5		
2	2	116		900100-32	ELECTROLYTIC	1μF/25V	C1, C4		
1	1	117		900402-15	TANTALIUM	10μF/25V	C15		
1	1	118		900402-11	TANTALIUM	3.3μF/25V	C44		
1	1	119		251070-16	CERAMIC	33pF/50V	C31		±5%
2	2	120		9000010-53		330pF/50V	C32, C36		±5%
3	3	121		-54		680pF/50V	C45, C33, C34		±5%
1	1	122		-25		1000pF/50V	C41		
24	24	123		-20		0.1μF/50V	C3, 6-10		14, 18, 19, 20, 22-30, 35, 40, 43, 47, 48
2	2	124		900010-14	CERAMIC	0.022μF/50V	C39, C42		
1	1	125		900100-40	ELECTROLYTIC	100μF/16V	C46		
2	2	126		900402-17	TANTALIUM	0.47μF/16V	C37, C38		
	1	127		-08		4.7μF/25V	C21		
	1	128		900402-14	TANTALIUM	1μF/35V	C11		
	1	129	B	900465-02	CAPACITOR CERAMIC	0.033μF/25V	C12		
		130							
		131							
		132							
1	1	133	B	901550-04	RESISTOR CARBON 1/4W ±5%	6.8KΩ	R25		
1	1	134		-56		47Ω	R1		
2	2	135		-108		360Ω	R14, R24		
4	4	136		-89		150Ω	R17, 18, 45, 46		
5	5	137		-52		220Ω	R4, 16, 36, 55,	57	
2	2	138		-14		330Ω	R3, R23		
6	6	139		-58		470Ω	R20, 22, 30, 37, 38	41	
1	1	140		-38		510Ω	R27		
6	6	141		-31		680Ω	R31, 42, 47-50		
6	6	142		-01		1KΩ	R2, 5, 6, 7, 8, 43		
4	4	143		-53		2KΩ	R9, 10, 26, 58		
5	5	144		-18		2.2KΩ	R19, 21, 32-34		
1	1	145		-69		1.5KΩ	R40		
4	4	146		-12		22KΩ	R12, 35, 39, 52		
1	1	147		-07		100KΩ	R44		
1	1	147	B	901550-03	RESISTER CARBON 1/4W ±5%	5.1KΩ	R11		

commodore

TITLE:	DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
PCB ASSY VIC-1541	T. Tokuda	11/16/82			B	1540048	1	5/10
	CHKD:		T. M					

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



172
173
174
177
ZPLS
79
ZPLS
165
ZPLS
166
172
174
177
ZPLS
P1
CR1
CR3
C1
C2
C3
CR2
C5
C6
CR4
C4
VR1
VR2
C7
C8
C9
UC7
UC6
UC5
C16
C17
P2
P3
L13
L14
LOT. NO
L15
L16
UA1
C18
C19
C20
UB4
UB3
UB2
UB1
C23
C24
C25
C28
UC4
UC3
UC2
UC1
R5
R6
R7
R8
R9
R10
R55
R56
R57
P4
P5
P6
P7
P8
L1
L2
C11
C12
C10
Y1
R1
L3
UD5
C14
L4
L5
L6
UE6
L7
L8
C15
R2
CR5
R3
R4
C27
C29
C30
C31
C32
C33
C34
C35
C36
C37
C38
C39
C40
C41
C42
C43
C44
C45
C46
C47
C21
UD4
UD3
UD2
UD1
UE4
UF4
UF3
R11
R12
R13
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R16
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R18
R19
R20
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R32
R33
R34
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R37
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R39
R40
R41
R42
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
CR6
CR7
CR8
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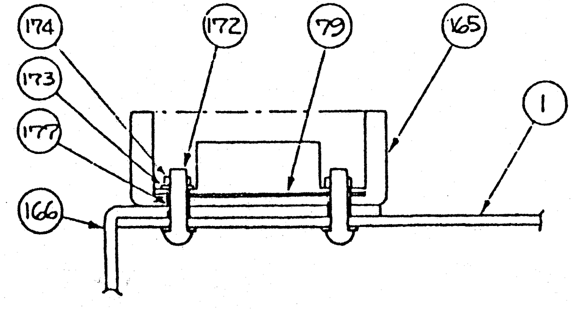
Q3
Q4
Q5
Q6
Q7



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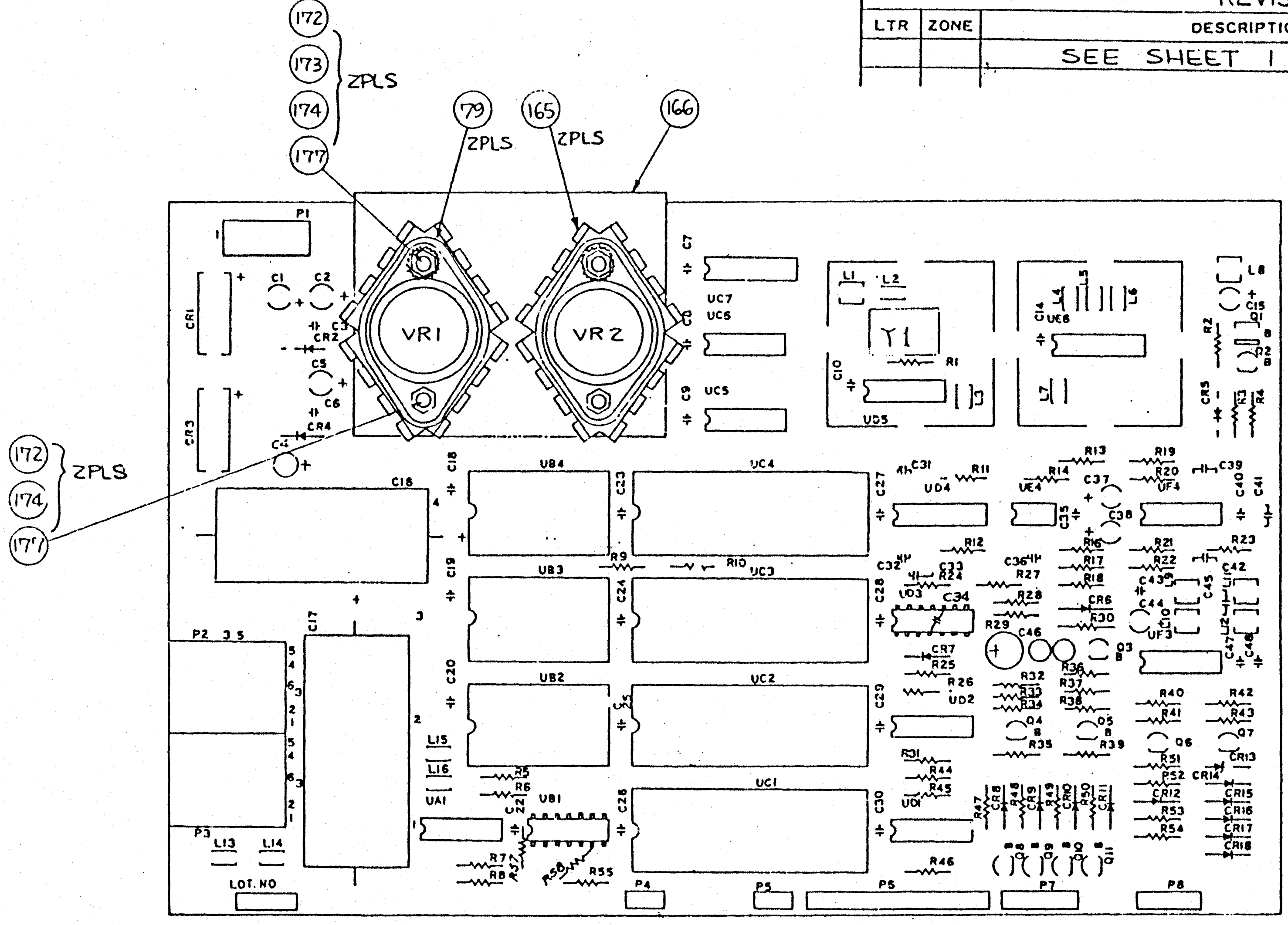
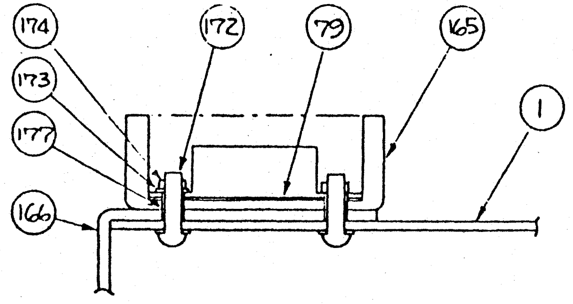
- 01 SHOWN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X ± .XX ± .XXX ± ∠'S ±	DRAWN BY: K. Maruyama	DATE	commodore
	CHKD: T. Fukuoka	12/16/82	P.C.B ASSY VIC-1541
	ENGR:	12/17/82	
	APPR: [illegible]	[illegible]	
MATERIAL:	USED ON VIC-1541	NEXT ASSY	SIZE B · 1540048 · REV J
FINISH:			

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		


172
173
174
177
ZPLS
79
ZPLS
165
ZPLS
166
172
174
177
ZPLS
VR1
VR2
P1
P2
P3
P4
P5
P6
P7
P8
LOT. NO
C17
C18
UB4
UB3
UB2
UB1
UC4
UC3
UC2
UC1
UC5
UC6
UC7
UD5
UE6
Y1
UA1
UD1
UD2
UD3
UD4
UE4
UF3
UF4


174
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172
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-02 SHOWN

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ± .XX ± .XXX ± ∠'S ±
MATERIAL:
FINISH:

DRAWN BY: K. Maruyama
CHKD: 7 Zelada 12/11/82
ENGR: 12/1/82
APPR: 12/1/82

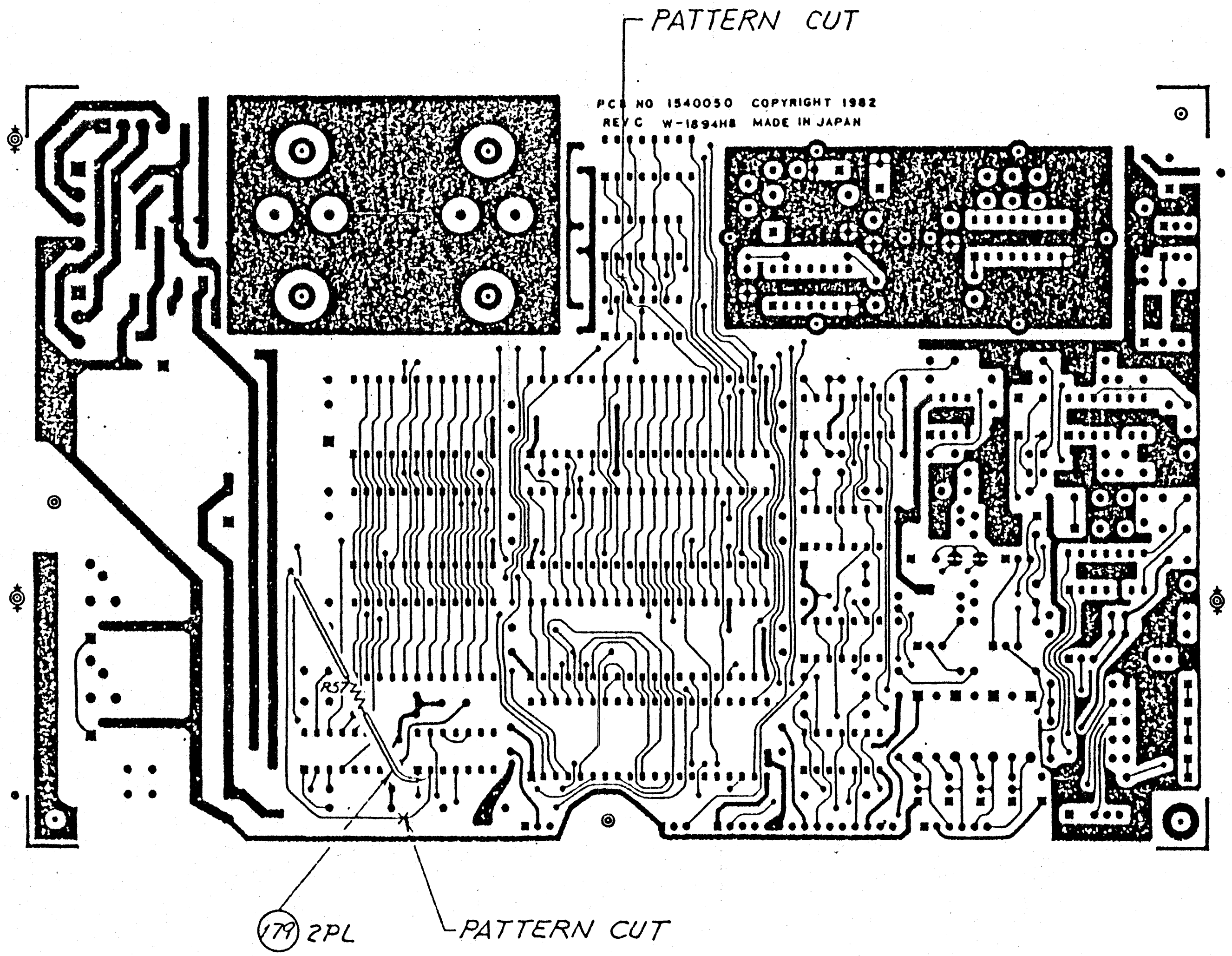
USED ON: VIC-1541
NEXT ASSY

commodore

P.C.B ASSY
VIC-1541

SIZE B
1540048
REV J
SCALE NONE
SHEET 8 OF 10

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		


PATTERN CUT
PCB NO 1540050 COPYRIGHT 1982
REV C W-1894HB MADE IN JAPAN
R57
(179) 2PL
PATTERN CUT

-01, -02 SHOWN

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
X .XX .XXX ∠'S
± ± ± ±
MATERIAL:
FINISH:

		DATE
DRAWN BY:	R. Iida	9-6-83
CHKD:	Y. Johenoba	9/10/83
ENGR:	T. Tak...	9/25/93
APPR:		

USED ON: VIC-1541
NEXT ASSY:

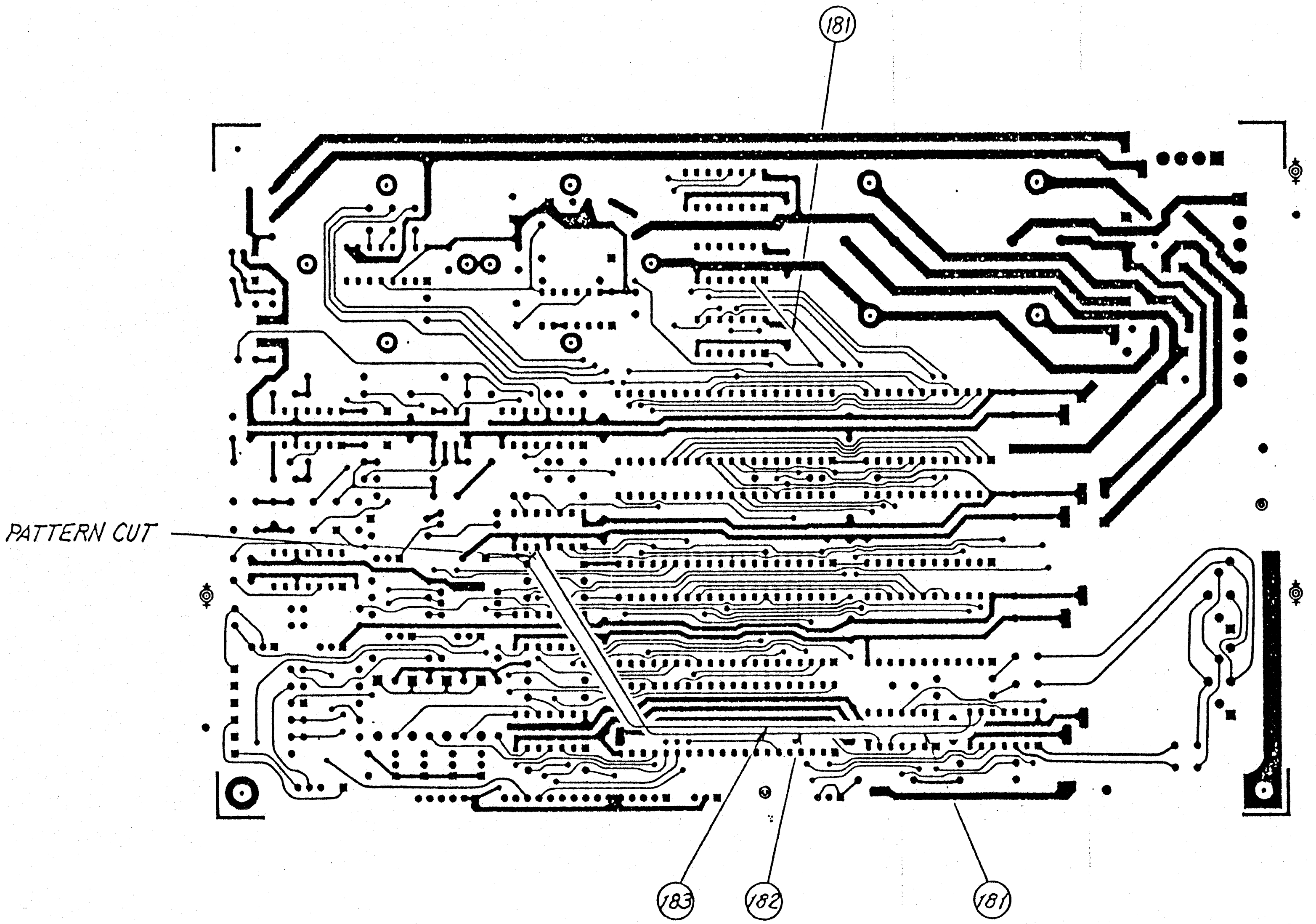
commodore

PCB ASSY
VIC-1541

SIZE: B
1540048
REV: J

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



-01, -02 SHOWN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X ± .XX ± .XXX ± ∠'S ±	DRAWN BY: R. Sida	DATE 9-6-83
	CHKD: Y. Takeuchi	7/10/83
	ENGR: T. Tokuda	1/28/83
	APPR:	
MATERIAL:	USED ON VIC-1541	NEXT ASSY
FINISH:		

commodore

PCB ASSY
VIC-1541

SIZE B | 1540048 | REV J

SCALE NONE | SHEET 10 OF 10

QUANTITY REQD PER PART/DASH NO.				ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
-01	-03	-02	-01							
1	1	1	1	1	C	1540007	P.C. BOARD 315×155×1.6t			MTL: GLASS EPOXY G-10
				2						
				3						
	REF		REF	4	C	1540008-01	SCHEMATIC DIAGRAM			
REF		REF		5	C	1540008-02	SCHEMATIC DIAGRAM			
1	1			6	B	901229-03	IC 2364-197 ROM	UAB5		$E000 ~ $FFF
1	1	1	1	7	B	901435-01	IC MPS 6502 CPU	UCD5		
1	1	1	1	8		325302-01	2364-130 ROM	UAB4		$C000 ~ $DFFF
		1	1	9		325303-01	2364-131 ROM	UAB5		$E000 ~ $FFFF
2	2	2	2	10		901437-01	MPS 6522 VIA	UAB1, UCD4		
4	4	4	4	11		901471-01	MPS 2114 RAM	UA2,3, UB2,3		
2	2	2	2	12		901521-01	74LS00 2-NAND	UB7, UF5		
1	1	1	1	13		901521-21	74LS02 2-NOR	UE5		
1	1	1	1	14		901521-02	74LS04 INV.	UB6		
1	1	1	1	15		901521-24	74LS10 3-NAND	UF3		
1	1	1	1	16		901521-30	74LS14 SCH. INV.	UC1		
1	1	1	1	17		901521-17	74LS42 DEC.	UB8		
2	2	2	2	18		901521-06	74LS74 D-FF	UE4, UF6		
1	1	1	1	19		901521-32	74LS86 2-Ex-OR	UG2		
1	1	1	1	20		901521-15	74LS133 13-NAND	UC2		
1	1	1	1	21		901521-18	74LS139 Dem. P	UE2		
1	1	1	1	22		901521-28	74LS164 8 Bit Shift Reg	UD2		
1	1	1	1	23		901521-12	74LS165 8 Bit Shift Reg	UD3		
1	1	1	1	24		901521-40	74LS191 4 Bit Count.	UE3		
2	2	2	2	25		901521-26	74LS193 4 Bit Count.	UE7, UF4		
1	1	1	1	26		901521-45	74LS245 Bus. Tranceiver	UC3		
1	1	1	1	27		901522-32	7402	UC7		
2	2	2	2	28		901522-06	7406 INV. OC.	UD1, UF2		
1	1	1	1	29		901522-03	74177	UC6		
1	1	1	1	30		901510-01	9602	UG3		
1	1	1	1	31		901523-04	LM311	UH4		
2	2	2	2	32	B	901523-08	NE592	UH5, UH7		
1	1	1	1	33	B	901522-01	7417	UG4		
S	S	S	S	34	B	901521-54	74LS197	UC6		SUBSTITUTION FOR ITEM 29
S	S			35	B	901229-02	2364-186 ROM	UAB5		$E000 ~ $FFFF SUB. FOR ITEM 6.
S	S			36	B	901229-01	IC 2364-173 ROM	UAB5		$E000 ~ $FFFF SUB. FOR ITEM 6. 2

commodore

TITLE: PCB ASSY VIC-1540

DRAWN BY: DATE / /

CHKD: C. Takane 8/26/81

APPR:

DATE / / / /

SIZE B

1540001-

SHEET 2 OF 8

PART NO.	DESCRIPTION
1540001 -01	PCB ASSY VIC-1540 (FCC) UL
1540001 -02	PCB ASSY VIC-1540
1540001 -03	PCB ASSY VIC-1541 (FCC) UL
1540001 -04	PCB ASSY VIC-1541

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
A	8/26/81	PRODUCTION RELEASE	T.T	B.T
B	4/24/82	ADDED SHEET 6 OF 7 (FOR FCC)	T.T	B.T
C	8/13/82	ADDED DASH -03 AND -04	T.T	B.T
D	11/20/82	ADDED ITEM 6.	T.T	T.Y
E	3/2/83	REVISED PER ECO 830084	T.T	T.O
F	11/29/83	REVISED PER ECO 830479		

2 THIS ROM CAN BE USED ON ONLY USA · CANADA AND JAPAN'S VERSION FOR SUBSTITUTE FOR ITEM 35.

1. SHEET 6 TO 8 OF 8 B-SIZE ASSY DWG.

NOTES.

commodore	TITLE: PCB ASSY VIC-1540	DRAWN BY: Y. IMAGAWA CHKD: B-T	DATE 9/1/81 8/[illegible]	PR:	DATE / / / /	SIZE B	1540001-	SHEET 1 OF 8

QUANTITY REQD PER PART/DASH NO. -04	-03	-02	-01	ITEM	D. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
1	1	1	1	73	B	325514-04	HEADER ASSY 2.5 PICH R-ANG. 4PIN	P2		MOLEX 5049-04AG
1	1	1	1	74		325515-06	6PIN	P7		3094-06A
1	1	1	1	75		325515-15	15PIN	P6		3094-15A
2	2	2	2	76	B	325515-03	2.5 PICH R-ANG. 3PIN	P5, P8		3094-03A
1	1	1	1	77	B	903316-04	HEADER ASSY 3.96 PICH 4PIN	P1		MOLEX 5271-04A
				78						
	1		1	79	B	900100-03	CAP. ELECTROLYTIC 220µF/25V	C65		
1	1	1	1	80	B	900101-44	CAP. ELECTROLYTIC 10000µF/16V	C52		AXIAL LEAD φ22×52
1	1	1	1	81		900101-45	6800µF/25V	C51		AXIAL LEAD φ22×52
2	2	2	2	82		900100-33	47µF/16V	C2, C5		
2	2	2	2	83		900100-32	ELECTROLYTIC 1µF/25V	C1, C4		
1	1	1	1	84		900402-15	TANTALIUM 10µF/25V	C12		
1	1	1	1	85		900402-11	TANTALIUM 3.3µF/25V	C23		
1	1	1	1	86		900010-51	CERAMIC 68PF/50V	C10		
1	1	1	1	87		251070-16	33PF/50V	C33		
2	2	2	2	88		900010-53	330PF/50V	C28, C49		± 5%
3	3	3	3	89		900010-54	680PF/50V	C16, C27, C50		± 5%
1	1	1	1	90		900010-25	1000PF/50V	C26		
40	40	40	40	91		900010-20	0.1µF/50V	C3,6-9,11,13,14,17	-22,	25,29-32,34-48,53-55,57,60,61
2	2	2	2	92		900010-14	CERAMIC 0.022µF/50V	C58, C59		
1	1	1	1	93		900100-40	ELECTROLYTIC 100µF/16V	C56		
2	2	2	2	94	B	900402-17	CAP. TANTALIUM 0.47µF/16V	C15, C24		± 20%
	1		1	95	B	900402-08	CAP. TANTALIUM 4.7µF/25V	C62		
	1		1	96	B	900402-14	CAP. TANTALIUM 1µF/10V	C63		
	1		1	97	B	900465-02	CAP. CERAMIC 0.033µF/25V	C64		
2	2	2	2	98	B	901550-108	RESISTOR, CARBON 1/4W 5% 360Ω	R25, R30		
1	1	1	1	99	B	901550-56	RESISTOR, CARBON 1/4W 5% 47Ω	R3		
5	5	5	5	100	B	901550-89	RESISTOR, CARBON 1/4W 5% 150Ω	R18, 19, 35, 36		
4	4	4	4	101		901550-52	220Ω	R4, 16, 17, 45, 59		
5	5	5	5	102		901550-14	330Ω	R1, 2, 5, 20, 37		
6	6	6	6	103		901550-58	470Ω	R27, 28, 47, 50, 55, 57		
1	1	1	1	104		901550-38	510Ω	R24		
5	5	5	5	105		901550-31	680Ω	R9, R39-R42		
8	8	8	8	106		901550-01	1 KΩ	R6, 11, 31-34, 44, 58		
4	4	4	4	107		901550-53	2 KΩ	R21-R23, R38		
5	5	5	5	108	B	901550-18	RESISTOR, CARBON 1/4W 5% 2.2KΩ	R14, 15, 51, 52, 56		

commodore

TITLE: PCB ASSY VIC-1540

DRAWN BY: DATE / /

CHKD: Ø. Takase DATE 8/1/81

APPR:

DATE / / / /

SIZE B

1540001-

SHEET 4 OF 8

QUANTITY REQD PER PART/DASH NO. -04	-03	-02	-01	ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
2	2	2	2	37	B	902671	TRANSISTOR NPN : 2SC945	Q2, Q3		
S	S	S	S	38		902693-01	NPN 2SC1815	Q2, Q3		SUBSTITUTION FOR ITEM 37
4	4	4	4	39		902679	NPN 2SD467	Q4-Q7		
S	S	S	S	40		902682	NPN 2SC2120	Q4-Q7		SUSTITUTION FOR ITEM 39
1	1	1	1	41		902720	PNP 2SA673	Q1		
4	4	4	4	42		902717	PNP 2SA733	Q8-Q11		
S	S	S	S	43	B	902744-01	TRANSISTOR PNP 2SA1015	Q8-Q11		SUBSTITUTION FOR ITEM 42
S	S	S	S	44	B	901522-30	IC 7407	UG4		SUBSTITUTION FOR ITEM 33
				45						
6	6	6	6	46	B	900750-02	DIODE, SIGNAL 1N4002	CR2,4,13-16		
8	8	8	8	47		900850-05	SIGNAL WG713C	CR6-11,17,18		
S	S	S	S	48		900850-01	SIGNAL 1N4148	CR6-11,17,18		SUBSTITUTION FOR ITEM 47
1	1	1	1	49		325505-01	ZENER 3.3V 500mW ±5%	CR5		HZ3C-2
S	S	S	S	50		325505-02	3.3V 500mW ±5%	CR5		HZ4A-1 SUB. FOR ITEM 49
S	S	S	S	51		900948-06	3.3V 500mW ±5%	CR5		1N5226B SUB. FOR ITEM 49
1	1	1	1	52		325506-01	5.1V 500mW ±5%	CR12		HZ5C-2
S	S	S	S	53		900948-11	ZENER 5.1V 500mW ±5%	CR12		1N5231 SUB. FOR ITEM 52
1	1	1	1	54		900756-01	BRIDGE 1.5A 50V	CR1		KBP-005
1	1	1	1	55	B	900755-02	DIODE, BRIDGE 4A 50V	CR3		KBL-02
				56						
1	1	1	1	57	B	900556-02	CRYSTAL 16MHz	Y1		
				58						
1	1	1	1	59	B	325513-01	COIL, INDUCTOR 2.2uH	L1		
2	2	2	2	60	B	325513-02	COIL, INDUCTOR 22uH	L8, L11		
3	3	3	3	61	B	325513-03	COIL, INDUCTOR 100uH	L7, L9, L10		
				62						
1	1	1	1	63	B	901528-04	VOLTAGE REGULATOR 12V 1.5A	VR1		LM340-12
1	1	1	1	64	B	901528-01	VOLTAGE REGULATOR 5V 3A	VR2		LM323
2	2	2	2	65	B	904914	INSULATION MYLAR TO-3			ATTACHED WITH VOLT REGULATOR
S	S	S	S	66	B	325551-01	INSULATION SILICONE TO-3			SUBSTITUTION FOR ITEM 65.
				67						
2	2	2	2	68	B	903361	CONNECTOR, DIN 6PIN	P3, P4		HOSHIDENKI TCS4460-01-101
				69						
3	3	3	3	70	B	904150-06	SOCKET IC LOW PRO. 40PIN			
2	2	2	2	71	B	904153-03	SOCKET IC LOW PRO. 24PIN			
				72						

commodore

TITLE: PCB ASSY VIC-1540

DRAWN BY: DATE / /

CHKD: Takasc DATE 8/21/81

APPR: DATE / /

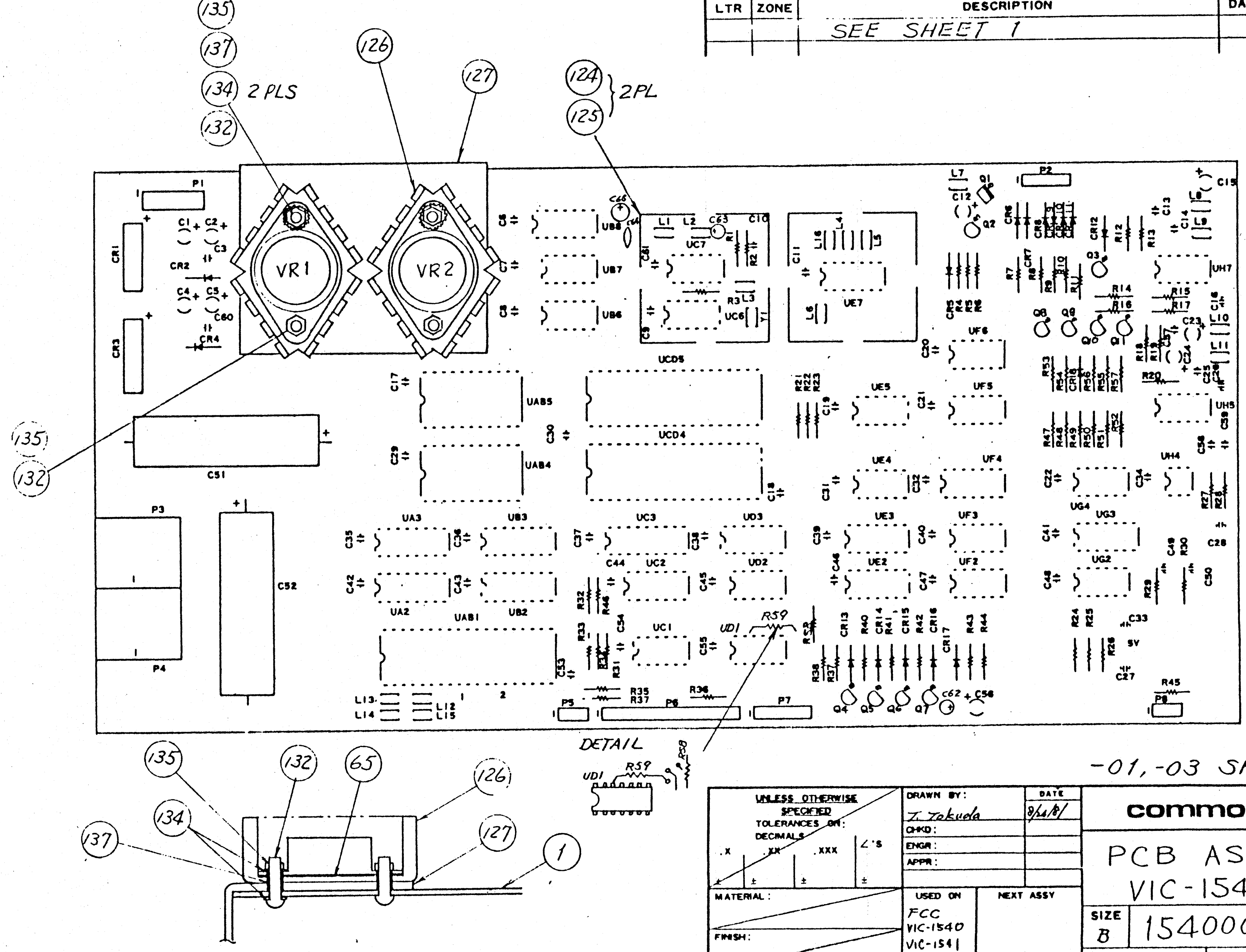
SIZE B

1540001-

SHEET 3 OF 8

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



135
137
134 2 PLS
132
126
127
124
125
2PL
VR1
VR2
P1
P2
P3
P4
P5
P6
P7
P8
CR1
CR3
C51
C52
UAB5
UAB4
UAB1
UCD5
UCD4
UD1
R59
R58
DETAIL
135
132
65
126
134
127
137
1

-01, -03 SHOWN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X ± .XX ± .XXX ± ∠'S ±	DRAWN BY: T. Tokuda CHKD: ENGR: APPR:	DATE 9/4/81
MATERIAL:	USED ON FCC VIC-1540 VIC-1541	NEXT ASSY
FINISH:		

commodore

PCB ASSY.
VIC-1540

SIZE B
1540001
REV F

SCALE NONE
SHEET 6 OF 8

QUANTITY REQD PER PART/DASH NO. -04	-03	-02	-01	ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
1	1	1	1	109	B	901550-69	RESISTOR, CARBON ¼W 5% 1.5KΩ	R48		
4	4	4	4	110	B	901550-12	22KΩ	R7,10,29,53		
1	1	1	1	111	B	901550-07	100KΩ	R46		
1	1	1	1	112	B	901550-03	RESISTOR, CARBON ¼W 5% 5.1KΩ	R26		
1	1	1	1	113	B	901751-43	RESISTOR, METAL OXIDE ¼W 1% 91Ω	R8		
1	1	1	1	114	B	901751-18	RESISTOR, METAL OXIDE ¼W 1% 100Ω	R49		
1	1	1	1	115	B	901751-44	RESISTOR, METAL OXIDE ¼W 1% 150Ω	R54		
2	2	2	2	116	B	901751-45	RESISTOR, METAL OXIDE ¼W 1% 9.1 KΩ	R12, R13		
1	1	1	1	117	B	901550-04	RESISTOR, CARBON ¼W 5% 6.8KΩ	R43		
				118						
				119						
				120						
10	10	10	10	121	B	903025-01	FERRITE BEAD	L2-L6, L12-L16		
				122						
				123						
	2		2	124	B	4022048	SHIELD BOX			
	2		2	125	B	4022047	SHIELD CAP			
2	2	2	2	126	B	1540023	HEAT SINK TO-3			
1	1	1	1	127	B	1540011	HEAT SINK REGULATOR			
A/R	A/R	A/R	A/R	128		904907-01	COMPOUND THER FOR HEAT SINK			CONJUNCTION WITH ITEM 65
				129						
				130						
				131						
4	4	4	4	132	B	906800-02	SCREW PAN HEAD M3×10			
4	4	4	4	134	B	905655-03	EXTERNAL TOOTH WASHER M3			
4	4	4	4	135	B	905960-03	NUT HEX. M3			
				136						
4	4	4	4	137	B	905477-02	TUBE VINYL φ3.5 × L 5mm			
				138						
1	1	1	1	139	B	251584-04	WRAPPING WIRE AWG 28 L=40mm			
1	1	1	1	140	B	-05	L=47mm			
1	1	1	1	141	B	-06	L=50mm			
2	2	2	2	142	B	251584-07	WRAPPING WIRE AWG 28 L=60mm			
				143						
				144						
				145						

commodore

TITLE: PCB ASSY VIC-1540

DRAWN BY: DATE / /

CHKD: C. Takai

DATE / / / /

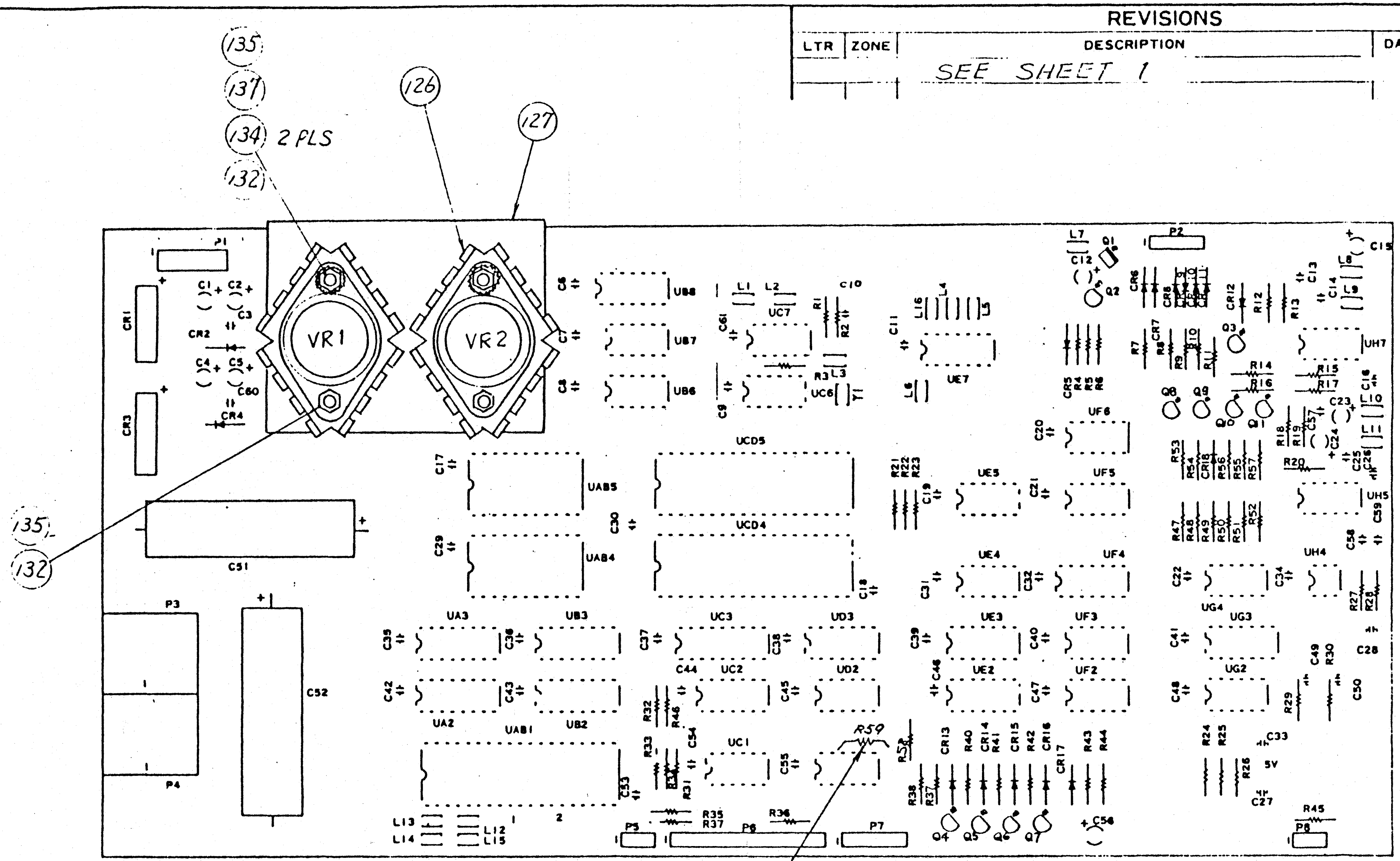
SIZE B

1540001-

SHEET 5 8

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



135
137
134 2 PLS
132
126
127
135
132
VR1
VR2
P1
P2
P3
P4
P5
P6
P7
P8
CR1
CR2
CR3
CR4
C1
C2
C3
C4
C5
C60
C51
C52
UA3
UB3
UC3
UD3
UA2
UB2
UC2
UD2
UAB1
UAB4
UAB5
UCD4
UCD5
UB6
UB7
UB8
UC1
UC6
UC7
UE2
UE3
UE4
UE5
UE7
UF2
UF3
UF4
UF5
UF6
UG2
UG3
UG4
UH4
UH5
UH7
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
R59
R58
5V
L1
L2
L3
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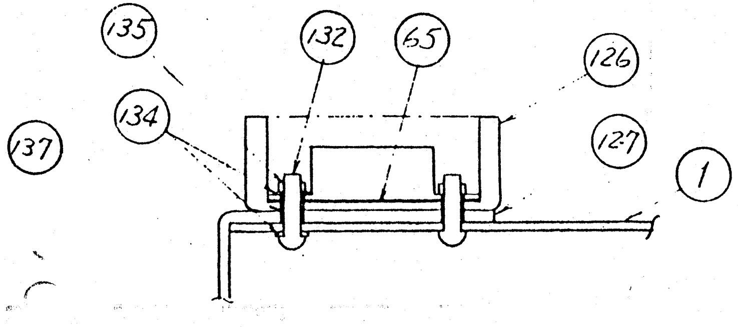
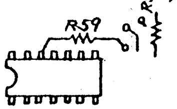
L9
L10
L11
L12
L13
L14
L15
L16
Y1



135
132
65
126
134
127
137
1

DETAIL

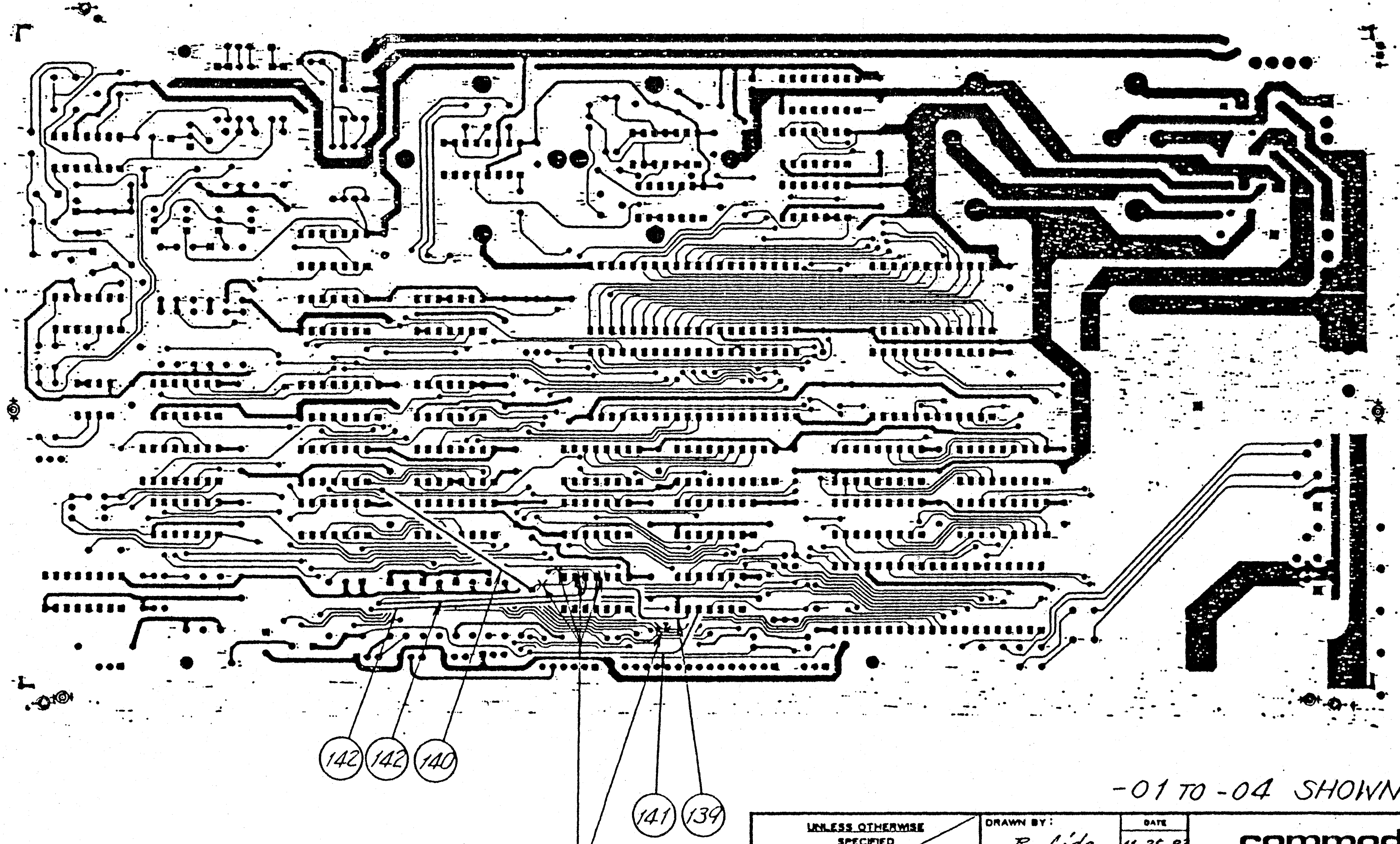


-02,-04 SHOWN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X .XX .XXX ∠'S	DRAWN BY: J. Tokuda	DATE 8/24/81	**commodore**
	CHKD:		PCB ASSY. VIC-1540
	ENGR:		
	APPR:		
MATERIAL FINISH	USED ON -1540	NEXT ASSY	SIZE B 1540001 REV F

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



-01 TO -04 SHOWN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X ± .XX ± .XXX ± ∠'S ±	DRAWN BY: R. Iida	DATE 11-25-83	**commodore**
	CHKD:		PCB. ASSY VIC-1540
	ENGR:		
	APPR:		
MATERIAL:	USED ON VIC-1540 VIC-1541	NEXT ASSY	SIZE B · 1540001 · REV F
FINISH:			SCALE NONE · SHEET 8 OF 8

THIRD ANGLE SYSTEM DIMENSION: mm F.06 300-0310

PART NO.	DESCRIPTION
1540002-01	POWER SUPPLY ASSY VIC-1540 UL
-02	CSA
-03	JPN
-04	VDE
1540002-05	VIC-1540 BSI
-06	1541 UL
-07	CSA
-08	JPN
-09	VDE
1540002-10	POWER SUPPLY ASSY 1541 BSI

[illegible]	年 月 日	[illegible]	[illegible]
A	8/26/81	PRODUCTION RELEASE	
B		CHANGED FILTER POWER CONNECTOR FOR CSA (ITEM 24 WAS ITEM 23)	T.T
C	5/24/82	CHANGED FILTER POWER CONNECTOR FOR FCC (ITEM 25 WAS ITEM 23)	T.T
D	6/22/82	CHANGED ACCESSORY OF TRANSFORMER	T.T
E	8/13/82	CHANGED SCREW TO M3-6 FROM M3-8. ADDED DASH 06 THRU 10 AND ITEM 21.	T.T
F	12/7/82	ADDED ITEM 8, 9 AND 63. ADDED SHEET 5 OF 5.	T.T
G	2/8/83	REVISED PER ECO 830060	
H	3/5/83	REVISED PER ECO 830101	
J	4/26/83	REVISED PER ECO 830196	
K	6/29/83	REVISED PER ECO 830298	
L	7/12/83	REVISED PER ECO 830327	
M	10-25-83	REVISED PER ECO 830429	

4. NO CHANGE QTY FOR ITEM 54 IF USED ITEM 6 OR 7.

3. USE ONLY WHEN USED ITEM8 OR 9.

2. IF ITEM 8 OR 9 ARE USED THEN QTY FOR ITEM 54 WILL CHANGE FROM 7 TO 9 PCS AND USED WITH ITEM 63.

1. SHEET 4 & 5 OF 5 ARE B-SIZE ASSY DWG.

NOTES.

commodore	TITLE: POWER SUPPLY ASSY VIC-1540	DRAWN BY: Y. IMAGAWA CHKD:	DATE 7/1/81	APPR:	DATE / / / /	SIZE B	1540002-	SHEET 1 OF 5

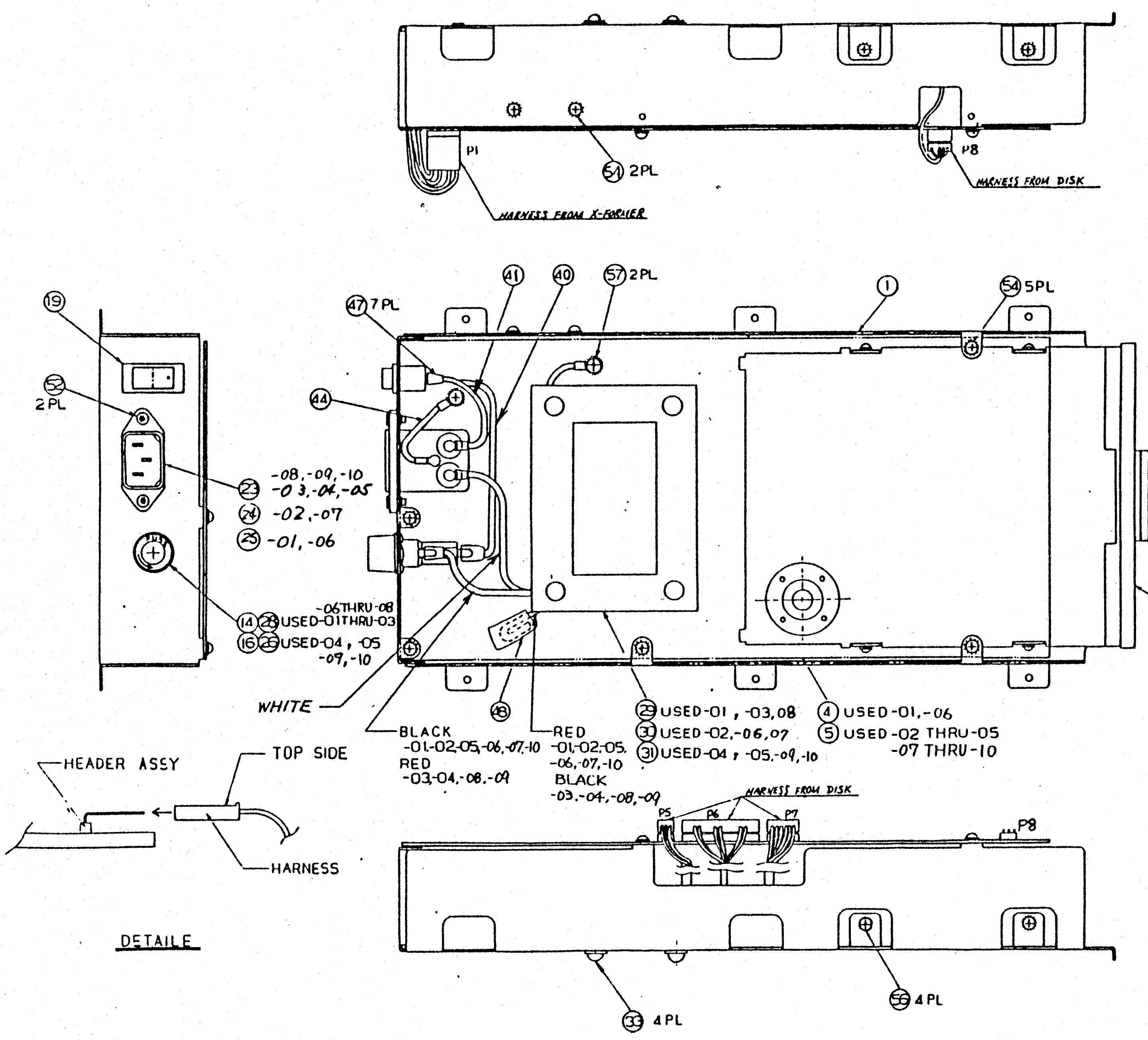
QUANTITY REQD PER PART/DASH NO. 10	09	08	07	06	05	04	03	02	01	ITEM	D. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
S	S	S	S	S	1	1	1	1	1	1	D	1540012	POWER . CHASSIS			SUBSTITUTE FOR ITEM 2, SEE NOTE 2
1	1	1	1	1						2	D	251153	POWER CHASSIS			SEE NOTE 3
										3						
									1	4	B/D	1540001 -01	PCB ASSY (FCC) UL			
					1	1	1	1		5	B/D	1540001 -02	PCB ASSY			
				S						6	B/D	1540001 -03	PCB ASSY (FCC) UL			SUBSTITUTE FOR ITEM 8
S	S	S	S							7	B/D	1540001 -04	PCB ASSY			SUBSTITUTE FOR ITEM 9
				1						8	B	1540048-01	PCB ASSY (FCC) UL			USED LOGIC ARRAY
1	1	1	1							9	B	1540048-02	PCB ASSY			USED LOGIC ARRAY
										10						
										11						
S	S	S	S	S	S	S	S	S	S	12	B	325519 -01	FLOPPY DISK (BLACK)			SUBSTITUTE FOR ITEM 13
1	1	1	1	1	1	1	1	1	1	13	B	325519 -02	FLOPPY DISK (BROWN)			
		1	1	1			1	1	1	14	B	903614 -01	FUSE HOLDER FH 032			
										15						
1	1				1	1				16	B	903615 -01	FUSE HOLDER FH 033			
										17						
										18						
1	1	1	1	1	1	1	1	1	1	19	B	904509 -01	SWITCH . ROCKER	SW1		
										20						
S	S	S		S	S	S	S		S	21	B	325552-01	FILTER POWER CONNECTOR			SUBSTITUTE FOR ITEM 23 (TOKIN)
S	S	S			S	S	S			22	B	903467 -01	FILTER POWER CONNECTOR			SUBSTITUTE FOR ITEM 23
1	1	1			1	1	1			23	B	903467 -02	FILTER POWER CONNECTOR			
		S	1				S	1		24	B	903350 -01	POWER CONNECTOR			SUBSTITUTE FOR ITEM 23 (HANAI PA-126)
S	S	S		1	S	S	S		1	25	B	903467 -03	FILTER POWER CONNECTOR			
1	1				1	1				26	B	903559 -02	FUSE, SLO BLO 250V 0.5A			5.2^{ϕ} x 20 mm
		S					S			27	B	903555 -20	FUSE, SLO BLO 250V 1.0A			6.3^{ϕ} x 30 mm, SUBSTITUTE FOR ITEM 28
		1	1	1			1	1	1	28	B	903556 -16	FUSE, NORMAL BLO 250V 1.0A			6.3^{ϕ} x 30 mm
		1					1		1	29	C	1540009 -01	POWER TRANSFORMER J/S	T1		
		S	1	1			S	1	S	30	C	1540009 -02	POWER TRANSFORMER UL, CSA, J/S	T1		SUBSTITUTE FOR ITEM 29
1	1				1	1				31	C	1540009 -03	POWER TRANSFORMER VDE BSI 240/220V	T1		
										32						
4	4	4	4	4	4	4	4	4	4	33	B	325548-04	SCREW PAN HEAD WITH SPRING WASHER M5-10			TO BE ATTACHED WITH X-FORMER
										34						
										35						
										36						

commodore

TITLE: POWER SUPPLY ASSY VIC-1540

DRAWN BY: Y. IMAGAWA DATE 7/1/81
CHKD: 8/27/81
APPR:
DATE / /
DATE / /
SIZE B
1540002-
SHEET 2 OF 5

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



P1
51 2PL
HARNESS FROM X-FORMER
P8
HARNESS FROM DISK
19
52 2PL
23 -08,-09,-10 -03,-04,-05
24 -02,-07
25 -01,-06
14 28 USED-01THRU-03 -06THRU-08
16 26 USED-04, -05 -09,-10
47 7PL
44
41
40
57 2PL
1
54 5PL
13
WHITE
48
BLACK -01-02-05,-06,-07,-10
RED -03-04,-08,-09
RED -01,-02,-05, -06,-07,-10
BLACK -03,-04,-08,-09
29 USED-01, -03,08
30 USED-02,-06,07
31 USED-04, -05,-09,-10
4 USED-01,-06
5 USED-02 THRU-05 -07 THRU-10
HARNESS FROM DISK
P5
P6
P7
P8
33 4PL
56 4PL
HEADER ASSY
TOP SIDE
HARNESS
DETAILE

2. ALL LEADS WILL HAVE A MINIMUM OF ONE WRAP AROUND TERMINALS PRIOR TO SOLDERING.

1. ALL OF HARNESS EXCEPT P1 SHOULD BE CONNECTED TO EACH HEADER ASSY (SEE DETAIL).

Y. IMAGAWA

VIC-1541

commodore

POWER SFLLY ASSY

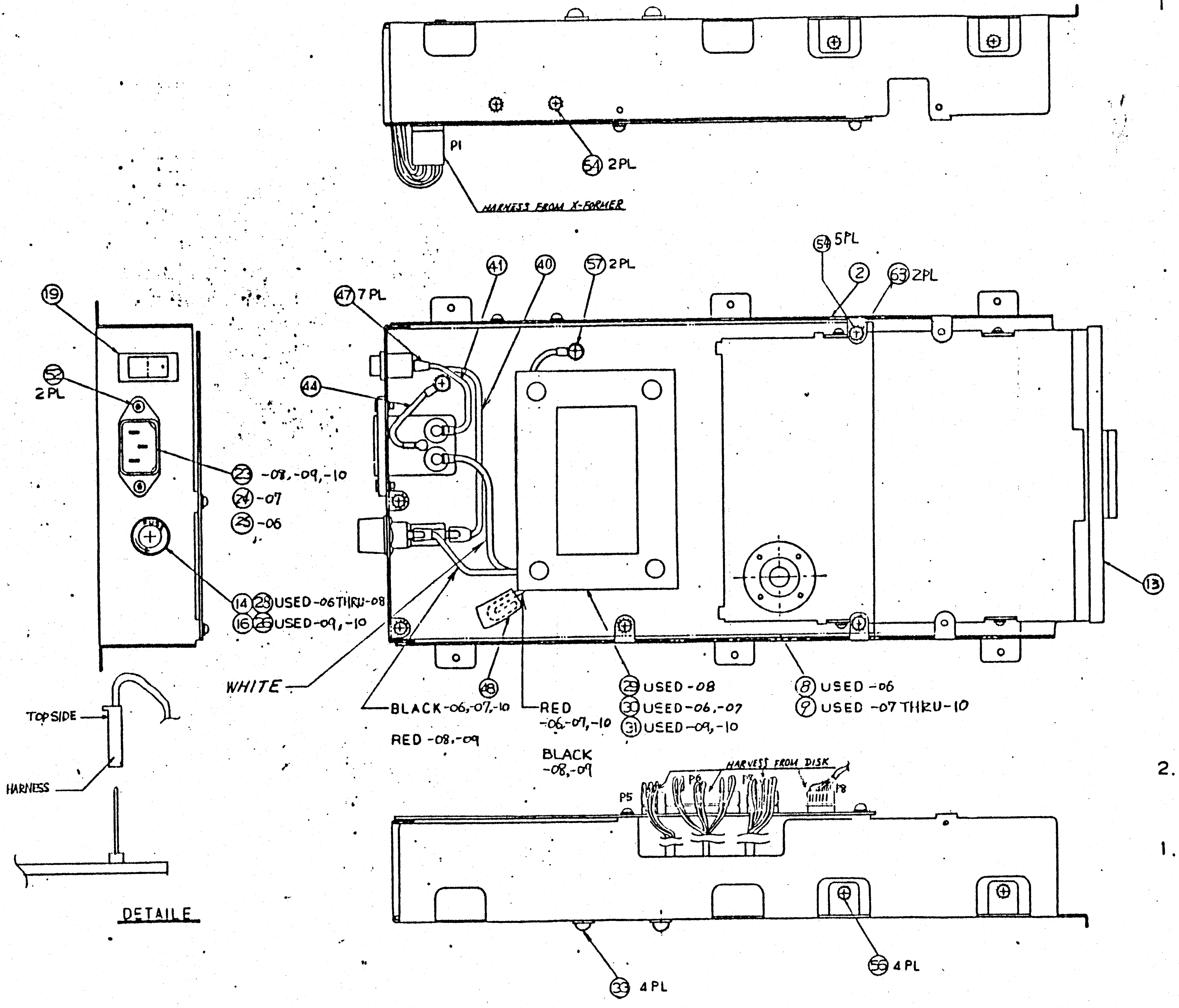
B 1540002 M

SHEET 4 OF 5

QUANTITY REQD PER PART/DASH NO. 10	09	08	07	06	05	04	03	02	01	ITEM	D. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
										37						
										38						
										39						
1	1	1	1	1	1	1	1	1	1	40	B	200017 -03	LEAD WIRE (BLACK)			1015 AWG-18 L150MM
1	1	1	1	1	1	1	1	1	1	41	B	200017 -11	LEAD WIRE (BLACK)			1015 AWG-18 L100MM
										42						
										43						
1	1	1	1	1	1	1	1	1	1	44	B	1540010	GROUND CABLE ASSY			
										45						
										46						
7	7	7	7	7	7	7	7	7	7	47	B	905476 -02	TUBING SHRINCABLE			ϕ5 × 20
1	1	1	1	1	1	1	1	1	1	48	B	905476 -04	TUBING SHRINCABLE			ϕ4 × 40
										49						
										50						
										51						
2	2	2	2	2	2	2	2	2	2	52	B	906803-02	SCREW FLAT HEAD M3X8			FILTER CONNECTOR (2)
										53						
7	7	7	7	7	7	7	7	7	7	54	B	325541-02	SCREW PAN HEAD M3X6 W/EXT	TOOTH WASHER		PCB (5), SEE NOTE 2
										55						
4	4	4	4	4	4	4	4	4	4	56	B	906610-03	SCREW PAN HEAD NO.6-32 UNC L10mm			FLOPPY DISK (4)
2	2	2	2	2	2	2	2	2	2	57	B	325542-02	SCREW PAN HEAD M4X6 W/EXT	TOOTH WASHER		GROUND (2)
										58						
										59						
										60						
										61						
										62						
2	2	2	2	2						63	B	1540051	METAL, L-ANGLE			SEE NOTE 2
										64						
										65						
										66						
										67						
										68						
										69						
										70						
										71						
										72						

commodore	TITLE: POWER SUPPLY A SY VIC-1540	DRAWN BY: Y. IMAGAWA CHKD:	DATE 11/1/81	DATE 11/1/81	SIZE B	1540002-	SHEET [illegible] OF 5

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



P1
HARNESS FROM X-FORMER
54 2PL
54 5PL
2
63 2PL
41
40
57 2PL
47 7PL
19
52 2PL
44
23 -08,-09,-10
24 -07
25 -06
14 28 USED-06THRU-08
16 26 USED-09,-10
13
WHITE
BLACK-06,-07,-10
RED -08,-09
48
RED -06,-07,-10
BLACK -08,-09
29 USED-08
30 USED-06,-07
31 USED-09,-10
8 USED -06
9 USED -07 THRU-10
HARNESS FROM DISK
P5
P6
P7
P8
33 4PL
56 4PL
TOPSIDE
HARNESS
DETAILE

2. ALL LEADS WILL HAVE A MINIMUM OF ONE WRAP AROUND TERMINALS FRIOR TO SOLDERING.

1. ALL OF HARNESS EXCEPT P1 SHOULD BE CONNECTED TO EACH HEADER ASSY (SEE DETAIL).

commodore

POWER SPLLY ASSY

1541

SIZE B 1540002 REV M

SHEET 5 OF 5

QUANTITY REQD PER PART / DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
02	01							
1	1	1	B	1540050	P C BOARD 238 x155 x1.6t			GLASS EPOXY. G-10
		2						
		3						
		4						
	REF	5	C	1540049-01	SCHEMATIC DIAGRAM			USED LOGIC ARRAY. FCC (UL)
REF		6	C	1540049-02	SCHEMATIC DIAGRAM			USED LOGIC ARRAY.
		7						
		8						
		9						
		10						
		11						
1	1	12	B	901435-01	IC MPS 6502 CPU	UC4		
2	2	13		901437-01	MPS 6522 VIA	UC2; UC3		
1	1	14		901229-03	2364-197 ROM	UB4		$E000 ~ $FFFF
1	1	15		325302-01	2364-130 ROM	UB3		$C000 ~ $DFFF
1	1	16		325572-01	LOGIC ARRAY 40 PIN DIP	UC1		
1	1	17		901521-01	74LS00 2-NAND	UC6		
1	1	18		901521-17	74LS42 DEC.	UC7		
1	1	19		901522-01	7417 BUFFER	UD2		
1	1	20		901521-32	74LS86 2-EX-OR	UD3		
2	2	21		901522-06	7406 INV. BUF.	UB1, UD1		
1	1	22		901521-02	74LS04 INV.	UC5		
1	1	23		901521-30	74LS14 SCH. INV.	UA1		
1	1	24		901521-26	74LS193 4 BIT. COU.	UE6		
1	1	25		901521-54	74LS197	UD5		
S	S	26		901522-03	74177	UD5		SUBSTITUTE FOR ITEM 25.
1	1	27		901510-01	9602	UD4		
1	1	28		901523-04	LM311	UE4		
2	2	29	B	901523-08	IC NE592	UF3, UF4		
1	1	30	B	325502-03	IC TMM2016P RAM	UB2		
S	S	31	B	325502-01	IC M58725P RAM	UB2		SUBSTITUTE FOR ITEM 30.
S	S	32	B	901522-30	IC 7407	UD2		SUBSTITUTE FOR ITEM 19.
		33						
		34						
		35						
		36						
		37						

commodore	TITLE: PCB ASSY. VIC-1541	DRWN BY: T. Takuda	DATE 11/16/82	ENGR:	DATE 12/17	SIZE B	1540048	REV C	SHT 2/8
		CHKD:		APPR: T.M	12/18				

PART NO.	DESCRIPTION
1540048-01	PCB ASSY. VIC-1541. FCC (UL) USED LOGIC ARRAY.
1540048-02	PCB ASSY. VIC-1541. USED LOGIC ARRAY.

[Fold Here]

DWG. NO. 1540048

TITLE: PCB ASSY. VIC-1541.

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	12/18/82	T. MATSUMOTO
B		REVISED PER ECO-830085	2/28/83	Y. Okubo
C		REVISED PER ECO 830125	3/25/83	Y. Okubo

1. SHEET 7 & 8 OF 8 ARE B-SIZE ASSY DWG

NOTES-UNLESS OTHERWISE SPECIFIED:

VC-1541

commodore	DRAWN BY: T. Tokuda	DATE 11/16/82	ENGR: [illegible]	12/17/82	SIZE B
	CHKD:		APPR: T. MATSUMOTO	12/18/82	SHEET 1 OF 8

QUANTITY REQD PER PART / DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
2	2	38	B	902671	TRANSISTOR NPN 2SC945	Q2, Q7		
S	S	39		902693-01	2SC1815	Q2, Q7		SUBSTITUTE FOR ITEM 38.
4	4	40		902679	2SD467	Q8 - Q11		
S	S	41		902682	NPN 2SC2120	Q8 - Q11		SUBSTITUTE FOR ITEM 40.
1	1	42		902720	PNP 2SA673	Q1		
4	4	43		902717	2SA733	Q3 - Q6		
S	S	44	B	902744-01	TRANSISTOR PNP 2SA1015	Q3 - Q6		SUBSTITUTE FOR ITEM 43.
		45						
		46						
		47						
		48						
		49						
		50						
		51						
6	6	52	B	900750-02	DIODE, RECTIFIER IN4002	CR2,4,8-11		
8	8	53		900850-05	SIGNAL WG713C	CR6,7,12,14-18		
S	S	54		900850-01	SIGNAL IN4148	CR6,7,12,14-18		SUBSTITUTE FOR ITEM 53.
1	1	55		325505-01	ZENER 3.3V 500mW ±5%	CR5		HZ3C-2
S	S	56		325505-02	3.3V 500mW ±5%	CR5		HZ4A-1 SUB. FOR ITEM 55.
S	S	57		900948-06	3.3V 500mW ±5%	CR5		IN5226B SUB. FOR ITEM 55.
1	1	58		325506-01	5.1V 500mW ±5%	CR13		HZ5C-2
S	S	59		900948-11	ZENER 5.1V 500mW ±5%	CR13		IN5231 SUB. FOR ITEM 58.
2	2	60	B	900756-01	DIODE BRIDGE 1.5A 50V	CR1, CR3		KBP-005
		61						
		62						
		63						
1	1	64	B	325566-01	CRYSTAL MODULE 16 MHz 50PPM	Y1		
S	S	65	B	325566-02	CRYSTAL MODULE 16 MHz 100PPM	Y1		SUBSTITUTE FOR ITEM 64.
		66						
		67						
		68						
1	1	69	B	325513-01	COIL, INDUCTOR 2.2μH	L1		
2	2	70	B	325513-02	COIL, INDUCTOR 22μH	L9, L10		
3	3	71	B	325513-03	COIL, INDUCTOR 100μH	L8, L11, L12		
		72						
		73						
		74						

commodore

TITLE: PCB ASSY. VIC-1541

DRWN BY: T. Tokuda DATE 11/16/82
CHKD:
ENGR: DATE 12/17
APPR: T. M 12/18
SIZE B 1540048
REV C
SHT 3/8

QUANTITY REQD PER PART/ DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
02	01							
1	1	75	B	901528-04	VOLTAGE REGULATOR 12V, 1.5A	VR1		LM340-12 TO-3
1	1	76	B	901528-03	VOLTAGE REGULATOR 5V, 1.2A	VR2		LM340-5 TO-3
		77						
		78						
2	2	79	B	904914	INSULATION MYLAR TO-3			
S	S	80	B	325551-01	INSULATION SILICONE TO-3			SUBSTITUTE FOR ITEM 79.
		81						
		82						
2	2	83	B	903361	CONNECTOR, DIN 6P	P2, P3		
		84						
		85						
		86						
4	4	87	B	904150-06	SOCKET IC LOW PRO 40 PIN			
3	3	88	B	904150-03	SOCKET IC LOW PRO 24 PIN			
		89						
		90						
		91						
		92						
		93						
		94						
		95						
1	1	96	B	251065-04	HEADER ASSY. 2.5 PITCH 4 PIN	P8		MOLEX 5048-04AG
1	1	97	↕	325562-06	↕ ↕ 6PIN	P7		↕ 3022-06A
1	1	98	↕	325562-15	↕ ↕ 15PIN	P6		↕ 3022-15A
2	2	99	↕	325562-03	↕ 2.5 PITCH 3PIN	P4, P5		↕ 3022-03A
1	1	100	B	903316-04	HEADER ASSY. 3.96 PITCH 4PIN	P1		MOLEX 5271-04A
		101						
		102						
		103						
		104						
		105						
		106						
		107						
		108						
		109						
		110						
		111						

commodore	TITLE: PCB ASSY. VIC-1541	DRWN BY: T. Tokuda CHKD:	DATE 10/16/82	ENGR: APPR: T.M	DATE 12/17 12/18	SIZE B	1540048	REV C	SHT 4/8

QUANTITY REQD PER PART/ DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
02	01							
1	1	149	B	901751-43	RESISTOR METAL OXIDE ¼W ±1% 91Ω	R51		
1	1	150	↑	↑ -18	↑ ↑ ↑ ↑ 100Ω	R28		
1	1	151	↓	↓ -44	↓ ↓ ↓ ↓ 150Ω	R29		
2	2	152	B	901751-45	RESISTOR METAL OXIDE ¼W ±1% 9.1KΩ	R53, R54		
		153						
		154						
		155						
		156						
		157						
10	10	158	B	325563-01	FERRITE BEAD	L2-7,13-16		
S	S	159	B	903025-01	FERRITE BEAD	L2-7,13-16		SUBSTITUTE FOR ITEM 158.
		160						
		161						
		162						
	2	163	B	4022048	SHIELD BOX			
	2	164	B	4022047	SHIELD CAP			
2	2	165	B	1540023	HEAT SINK TO-3			
1	1	166	B	1540011	HEAT SINK REGULATOR			
A/R	A/R	167		904907-01	COMPOUND THER FOR HEAT SINK			
		168						
		169						
		170						
		171						
4	4	172	B	325541-05	SCREW PAN HEAD/EXT TOOTH WASHER M3-12			
2	2	173	B	905655-03	EXTERNAL TOOTH WASHER M3			
4	4	174	B	905960-03	NUT HEX. M3			
		175						
		176						
4	4	177	B	905477-02	TUBING VINYL 3.5 DIA X 5 MM			
		178						
		179						
		180						
		181						
		182						
		183						
		184						
		185						

commodore

TITLE: PCB ASSY. VIC-1541

DRWN BY: T. Tokuda	DATE 11/16/82	ENGR: YO	DATE 12/17	SIZE B	1540048	REV C	SHT 6/8
CHKD:		APPR: √ T. M	12/18				

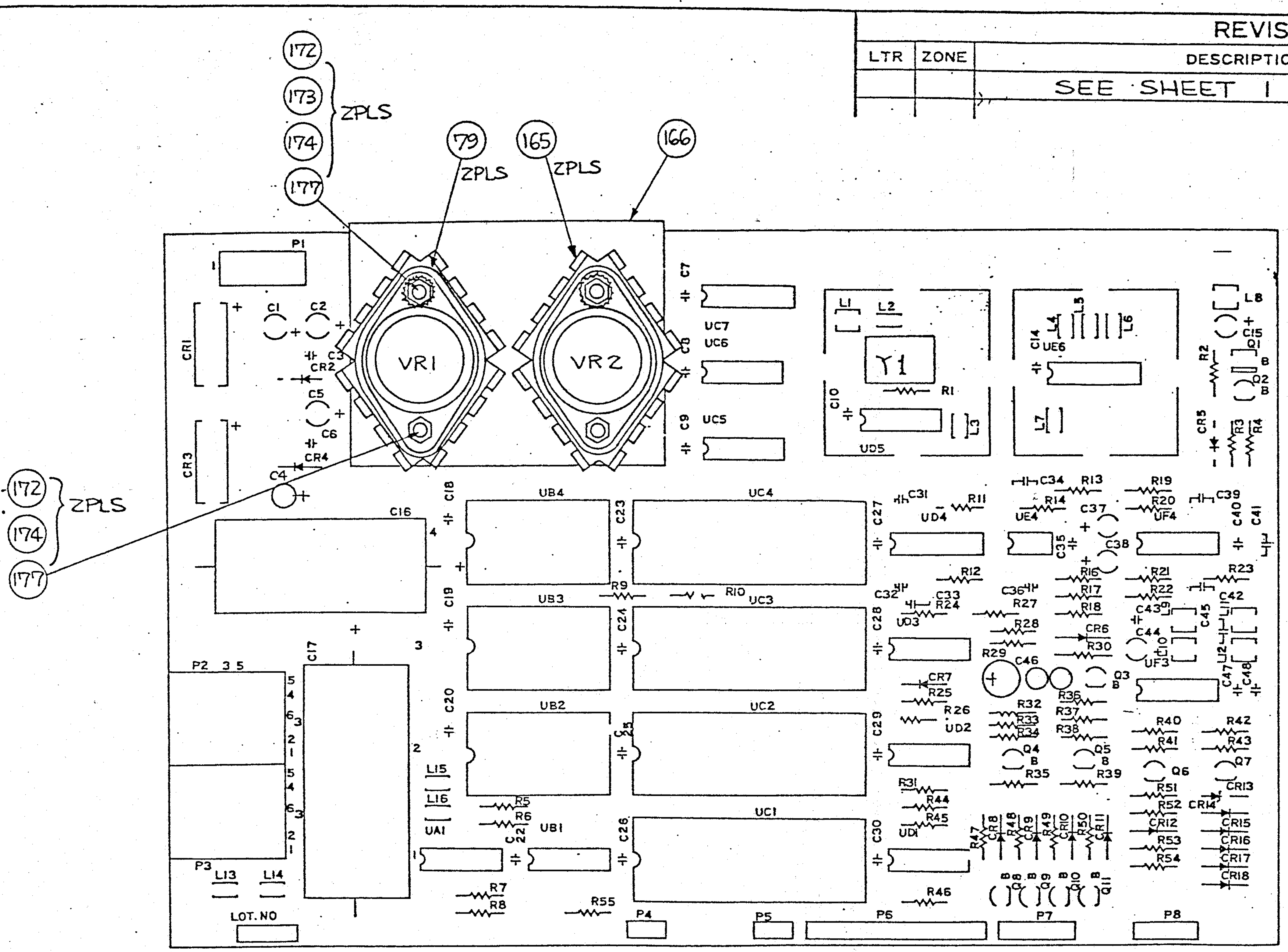
QUANTITY REQD PER PART/ DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION			REF DES	BEND		NOTES
02	01										
	1	112	B	900301-04	CAPACITOR	ELECT.	220µF/10V	C13			
1	1	113	↕	900101-45	↕	↕	6800µF/25V	C17			
1	1	114	↕	900101-32	↕	↕	4700µF/16V	C16			
2	2	115	↕	900100-33	↕	↕	47µF/16V	C2, C5			
2	2	116	↕	900100-32	↕	ELECT.	1µF/25V	C1, C4			
1	1	117	↕	900402-15	↕	TANTALIUM	10µF/25V	C15			
1	1	118	↕	900402-11	↕	TANTALIUM	3.3µF/25V	C44			
1	1	119	↕	900010-52	↕	CERAMIC	150pF/50V	C31		±5%	
2	2	120	↕	↕ -53	↕	↕	330pF/50V	C32, C36		±5%	
3	3	121	↕	↕ -54	↕	↕	680pF/50V	C45, C33, C34		±5%	
1	1	122	↕	↕ -25	↕	↕	1000pF/50V	C41			
24	24	123	↕	↕ -20	↕	↕	0.1µF/50V	C3, 6-10		14, 18, 19, 20, 22-30, 35, 40, 43, 47, 48	
2	2	124	↕	900010-14	↕	CERAMIC	0.022µF/50V	C39, C42			
1	1	125	↕	900100-40	↕	ELECT.	100µF/16V	C46			
2	2	126	↕	900402-17	↕	TANTALIUM	0.47µF/25V	C37, C38			
	1	127	↕	↕ -08	↕	↕	4.7µF/25V	C21			
	1	128	↕	900402-14	↕	TANTALIUM	1µF/16V	C11			
	1	129	B	900465-02	CAPACITOR	CERAMIC	0.033µF/25V	C12			
		130									
		131									
		132									
		133									
1	1	134	B	901550-56	RESISTOR CARBON	1/4W ±5%	47Ω	R1			
2	2	135	B	901550-108	RESISTOR CARBON	1/4W ±5%	360Ω	R14, R24			
4	4	136	↕	↕ -89	↕	↕	150Ω	R17, 18, 45, 46			
4	4	137	↕	↕ -52	↕	↕	220Ω	R4, 16, 36, 55			
2	2	138	↕	↕ -14	↕	↕	330Ω	R3, R23			
6	6	139	↕	↕ -58	↕	↕	470Ω	R20, 22, 30, 37, 38	.41		
1	1	140	↕	↕ -38	↕	↕	510Ω	R27			
6	6	141	↕	↕ -31	↕	↕	680Ω	R31, 42, 47-50			
6	6	142	↕	↕ -01	↕	↕	1kΩ	R2, 5, 6, 7, 8, 43			
3	3	143	↕	↕ -53	↕	↕	2kΩ	R9, 10, 26			
6	6	144	↕	↕ -18	↕	↕	2.2kΩ	R11, 19, 21, 32-34			
1	1	145	↕	↕ -69	↕	↕	1.5kΩ	R40			
4	4	146	↕	↕ -12	↕	↕	22kΩ	R12, 35, 39, 52			
2	2	147	B	901550-07	RESISTOR CARBON	1/4W ±5%	100kΩ	R25, R44			
		148									

commodore

TITLE:	DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
PCB ASSY. VIC-1541	T. Tokuda	11/16/82		12/7	B	1540048	C	5/8
	CHKD:		APPR: T. M	12/18				

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



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ZPLS
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ZPLS
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ZPLS
P1
VR1
VR2
CR1
CR2
CR3
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C1
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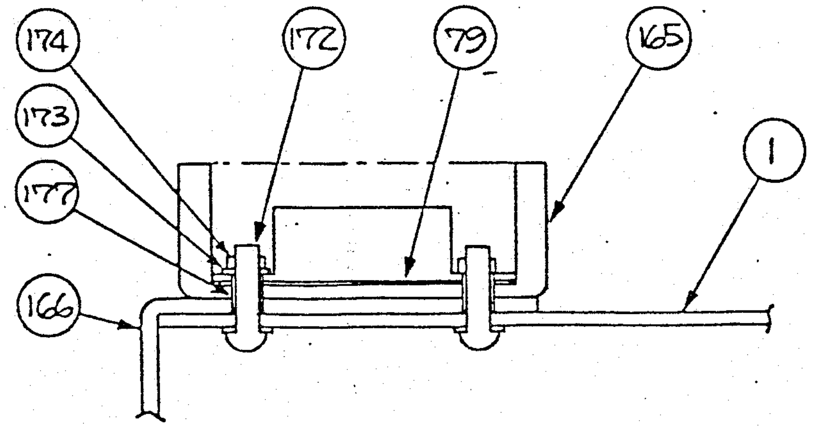

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UNLESS OTHERWISE SPECIFIED
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DECIMALS

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MATERIAL:

FINISH:

	DATE
DRAWN BY: K. Maruyama	
CHKD: T. Tokuda	12/16/82
ENGR:	12/17/82
APPR: T. MATSUMOTO	12/18/82

USED ON	NEXT ASSY
VIC-1541	

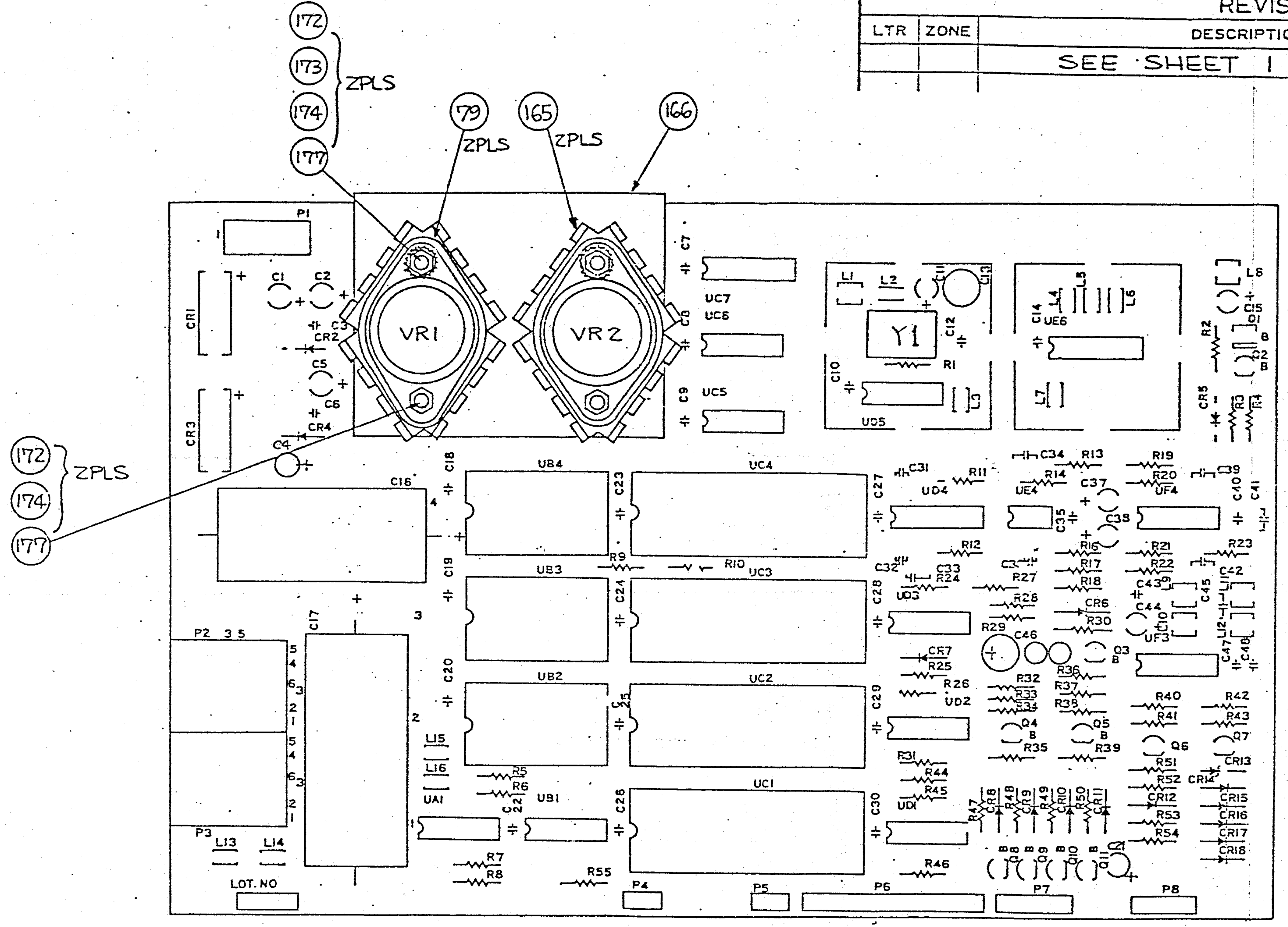
commodore

P.C.B ASSY
VIC-1541

SIZE		REV
B	1540048-02	C

SCALE NONE
SHEET 8 OF 8

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		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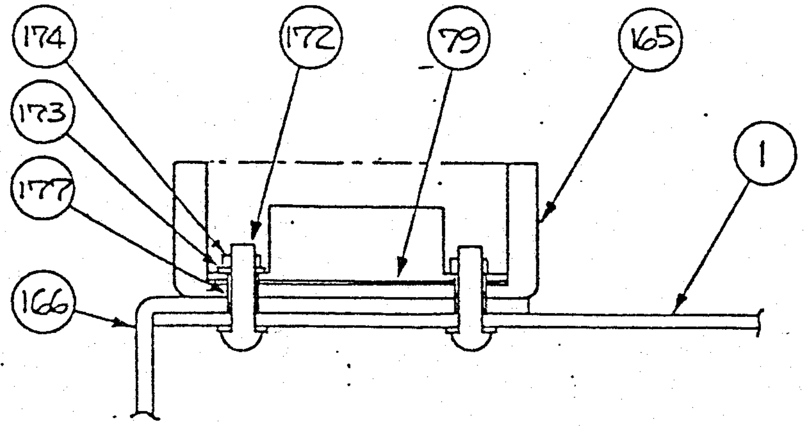
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UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS

.X	.XX	.XXX	∠'S
±	±	±	±

MATERIAL:

FINISH:

		DATE
DRAWN BY:	K. Maruyama	
CHKD:	T. Tokuda	12/16/82
ENGR:		1/7/82
APPR:	T. MATSUMOTO	12/18/82

USED ON	NEXT ASSY
VIC-1541	

commodore

P C B ASSY
VIC-1541

SIZE		REV
B	1540048-01	C

SCALE NONE | SHEET 7 OF 8

PART NO.	DESCRIPTION			
1540005 -01	MAIN	ASSY	VIC-1540	UL
-02			VIC-1540	CSA
-03			VIC-1540	JIS
-04			VC-1540	VDE
1540005 -05	MAIN	ASSY	VIC-1540	BSI
-06			1541	UL
-07			1541	CSA
-08			1541	JIS
-09			1541	VDE
1540005-10	MAIN	ASSY	1541	BSI

符号	年月日	図面などの履歴	記印	検印
A	8/26/81	PRODUCTION RELEASE		O.I
B	5/24/82	ADDED ITEM 32 FOR UL(FCC)	T.T	
C	8/13/82	ADDED DASH 06 THRU 10	T.T	
D	3/5/83	ADDED ITEM 58	N.N	YO
E	3/5/83	REVISED PER ECO 830102		YO
F	3/25/83	REVISED PER ECO 830131		N.W
G	7/5/83	REVISED PER ECO 830314		
H	7/18/83	REVISED PER ECO 830317		
J	10-13-83	REVISED PER ECO 830419		

NOTES.

1. SHEET 4 OF 4 IS C-SIZE
   ASSY DWG.

$\boxed{2}$ MUST USE ITEM 58 WHEN ITEM 48 USED.

3. TO BE USED "LISTED UL & (UL) " ON RATING LABEL.

commodore	TITLE:	DRAWN BY:	DATE		DATE	SIZE		SHEET
	MAIN ASSY 1541	Y. IMAGAWA	7/1/81	PPR:	/ /	B	1540005	1 of

QUANTITY REQD PER PART/DASH NO.										ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
-10	-09	-08	-07	-06	-05	-04	-03	-02	-01							
										1						
										2						
										3						
									1	4		1540004-01	BASE ASSY UL			
								1		5		-02	CSA			
							1			6		-03	JIS			
						1				7		-04	VDE			
					1					8		-05	BSI			
				1						9		-06	UL			
			1							10		-07	CSA			
		1								11		-08	JIS			
	1									12		-09	VDE			
1										13		1540004-10	BASE ASSY BSI			
										14						
										15						
										16						
										17						
										18						
										19						
										20						
										21						
										22						
					1			1	1	23	B	1540016-01	PLATE MODEL VIC-1540			
					S		1	S	S	24		-02	VIC-1540			
						1				25	B	1540016-03	PLATE MODEL VC-1540			
										26						
										27						
1	1	1	1	1						28	B	1540052	PLATE MODEL 1541			
										29						
										30						
										31						
4	4	4	4	4	4	4	4	4	4	32	B	950150-02	FOOT SELF ADHESIVE			SJ 5012
										33						
										34						
										35						
										36						

commodore

TITLE: MAIN ASSY 1541

DRAWN BY: K. Maruyama DATE 8/10/82
CHKD: T. Tokuda 8/10/82
DATE / /
APPR: [illegible] [illegible]

SIZE B
1540005
SHEET 2 OF 4

QUANTITY REQD PER PART/DASH NO.												ITEM	D. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
		-10	-09	-08	-07	-06	-05	-04	-03	-02	-01							
												37						
												38						
												39						
										1		40	B	1540017 -01	LABEL RATING VIC-1540			UL, CSA
									1			41		-02	VIC-1540			JIS
								1				42		-03	VC -1540			VDE
							1					43		1540017 -04	VIC-1540			BSI
					1	S						44		1540030 -01	1541			NOT LISTED UL & CSA. SEE NOTE 3 SUB. FOR ITEM 48.
				1								45		-02	1541			JIS
			1									46		-03	1541			VDE
		1										47		-04	1541			BSI
						1						48	B	1540030 -06	LABEL RATING 1541			LISTED UL. SEE NOTE 3.
												49						
												50						
												51						
				1	1	1			1	1	1	52	B	1010019-01	LABEL WARNING, FUSE REPLACEMENT			ENGLISH 250V 1A
		1	1				1	1				53	B	1010019-02	LABEL WARNING, FUSE REPLACEMENT			ENGLISH 250V 0.5A
					1					1		54	B	4022055	LABEL WARNING, FUSE REPLACEMENT			FRENCH 250V 1A
					1					1		55	B	4022056	LABEL WARNING CSA			
						S					1	56	B	320955-02	LABEL, FCC ID			$\boxed{2}$
						1						57	B	325553	LABEL, FCC CLASS B			
						1						58	B	320955-14	LABEL, FCC ID			$\boxed{2}$
												59						
												60						
		4	4	4	4	4	4	4	4	4	4	61	B	906800-02	SCREW PAN HEAD M3×10			
												62						
		1	1	1	1	1	1	1	1	1	1	63	B	251185 - 01	TOP CASE ASSY			
												64						
												65						
												66						
												67						
												68						
												69						
												70						
												71						
												72						

commodore

TITLE:	DRAWN BY:	DATE		DATE	SIZE		SHEET
MAIN ASSY 1541	K. Maruyama	8/10/82		/ /	B	1540005	3 OF 4
	CHKD: T. Tokuda	8/10/82	APPR	3/25/83			

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	3-15-84	
B		REVISED PER ECO 840312	9-10-84	

1. FLOPPY DISK DRIVE

1. THIS SPECIFICATION DESCRIBES A THIN MINIFLOPPY DISK DRIVE FOR USE IN COMPUTER SYSTEM.

2. GENERAL SPECIFICATION

2-1 CAPACITY (UNFORMATTED)	
MEDIA	201K BYTE
TRACK	5000 ~ 6153 BYTE
2-2 SECTOR METHOD	SOFT
2-3 SPINDLE ACTUATOR	BELT
2-4 HEAD POSITIONING METHOD	METAL BAND
2-5 ROTATIONAL SPEED	300 RPM
2-6 TRACK DENSITY	48 TPI
2-7 NUMBER OF TRACKS	35 (40 MAX)
2-8 TRANSFER RATE	250K BIT/S
2-9 RECORDING METHOD	GCR
2-10 ACCESS TIME	
TRACK TO TRACK	12M SEC
SETTLING	15M SEC
2-11 MOTOR START TIME	1 SEC MAX

3. ENVIRONMENTAL

3-1 TEMPERATURE	
OPERATING	10 ~ 47°C
STORAGE	-22 ~ 60°C
3-2 HUMIDITY (WITHOUT CONDENSATION)	
OPERATING	20 ~ 80 %RH
STORAGE	1 ~ 95 %RH

4. RELIABILITY

4-1 ERROR RATE	
SOFT READ ERRORS	1×10^{-9}/BIT
SEEK ERRORS	1×10^{-6}/SEEKS
4-2 MTBF (MOTOR ON DUTY 20%)	8×10^3 HOURS
4-3 MEDIA LIFE	3×10^6 PASSES PER TRACK

5. POWER

5-1 12±0.6 V DC	1.8 A MAX.

6. MOUNTING

6-1 TOP LOADING	YES
FRONT LOADING	
DISKETTE VERTICAL	YES
DISKETTE HORIZONTAL	
STEPPING MORTOR UP	NO
STEPPING MORTOR DOWN	YES

7. HEAD

SINGLE R/W GAP WITH SEPARATE STRADDLE ERASE

7-1 WRITE CURRENT	7 MA P-P
7-2 ERASE CORRENT	40 MA
7-3 READ OUTPUT (THROUGH 1541 AMP.)	190MV P-P MIN. AT 5162 FCI (TR.34) 1.4V P-P MAX. AT 1768 FCI (TR.00)
7-4 RESOLUTION	

$$\frac{\text{EOUT } 5162 \text{ FCI}}{\text{EOUT } 2581 \text{ FCI}} \geq 0.55 \text{ (TR.34)}$$

$$\frac{\text{EOUT } 3536 \text{ FCI}}{\text{EOUT } 1768 \text{ FCI}} \leq 0.95 \text{ (TR. 00)}$$

8. STEPPING MOTOR

8-1 ONE STEP ANGLE	1.8°
8-2 OPERATING VOLTAGE	12V ±10% DC
8-3 MOTOR CURRENT PER PHASE	400 MA MAX.
8-4 DRIVE MODE	1 PHASE

9. SPINDLE MOTOR

9-1 MOTOR SPEED	2340 RPM
9-2 STALL CURRENT	1.1 A
9-3 DRIFT	
INITIAL	300RPM ±1.5%
LONG TIME	300RPM ±2.9%

10. PHYSICAL DIMENTION (INCLUSIVE OF FRONT PANEL)

10-1 HEIGHT	42.9 MM
10-2 WIDTH	193 MM
10-3 LENGTH	149.3 MM
10-4 WEIGHT	950 G (2.09 POUND) MAX.
11. TRACK 00 LIMITER	+0.25 MM (+0.01 IN) +0.1 MM (+0.004 IN)

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ±
.XX ±
.XXX ±
∠'S ±
MATERIAL:
FINISH:

DRAWN BY:	N. Hanamura	1-10-84
CHKD:		3/13/84
ENGR:	S. Takahashi	3-14-84
APPR:		3-14-84

USED ON
NEXT ASSY

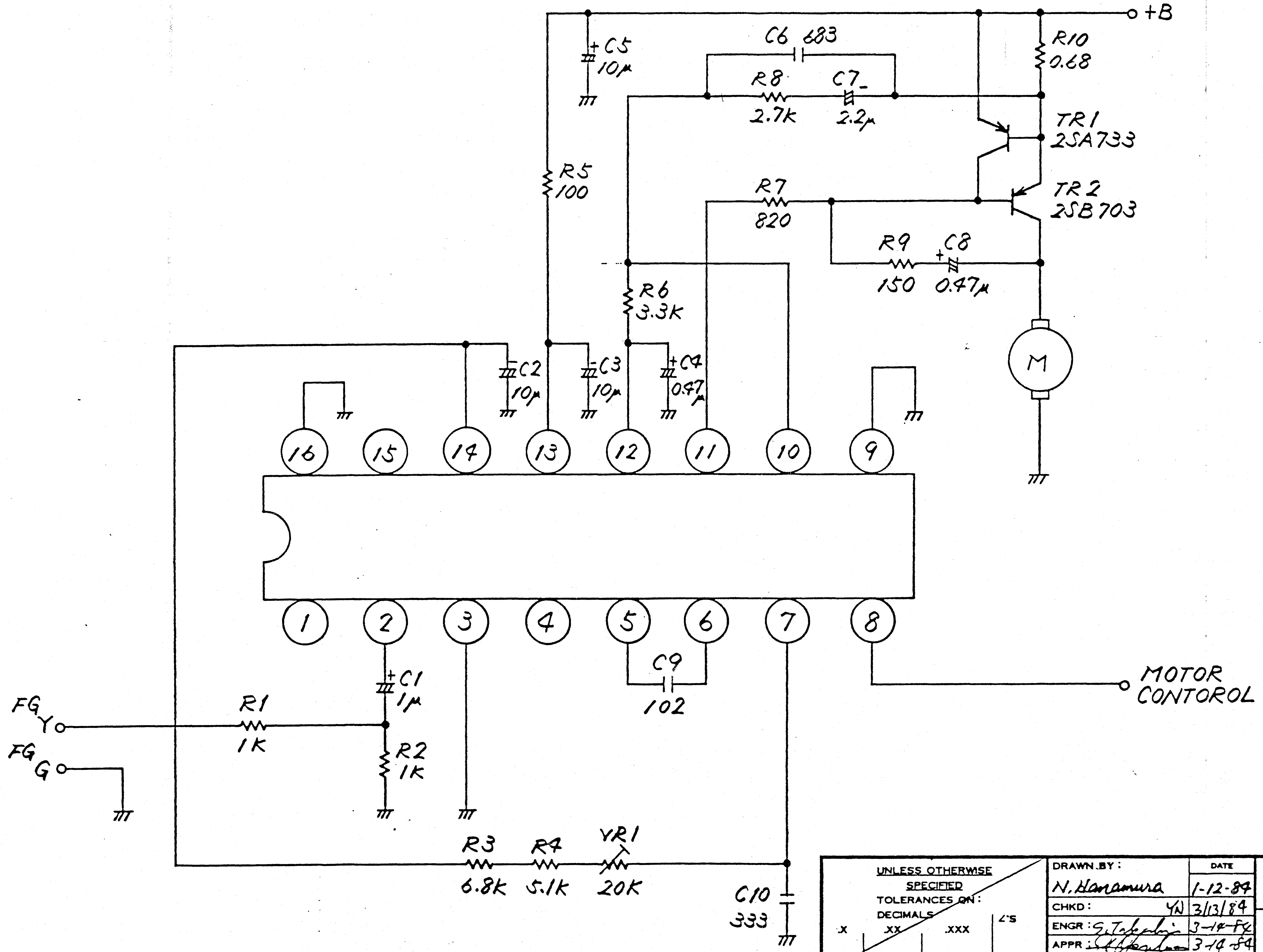
commodore

FLOPPY DISK
NEWTRONICS

SIZE B
251643
REV B
SCALE NONE
SHEET 1 OF 5

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		


+B
C5
10μ
C6 683
R10
0.68
R8
2.7k
C7
2.2μ
TR1
2SA733
R5
100
R7
820
TR2
2SB703
R9
150
C8
0.47μ
R6
3.3K
M
C2
10μ
C3
10μ
C4
0.47μ
16
15
14
13
12
11
10
9
1
2
3
4
5
6
7
8
C9
102
MOTOR
CONTOROL
C1
1μ
FG Y
FG G
R1
1K
R2
1K
R3
6.8k
R4
5.1k
VR1
20K
C10
333

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ± .XX ± .XXX ± ∠'S ±
MATERIAL:
FINISH:

DRAWN BY:	DATE
N. Hanamura	1-12-84
CHKD: YN	3/13/84
ENGR: S. Takahashi	3-14-84
APPR:	3-14-84

USED ON
NEXT ASSY

commodore

FLOPPY DISK
NEWTRONICS

SIZE B
251643
REV B
SCALE NONE
SHEET 4 OF 5

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

2. HEAD ASSEMBLY

1. SCOPE

THIS SPECIFICATION DESCRIBES A HEAD ASSEMBLY FOR USE D500 FLOPPY DISK DRIVE.

2. PHYSICAL

2-1	HEAD TYPE	SINGLE R/W GAP SEPARATE STRADDLE ERASE
2-2	HEAD/MEDIA INTERFACE	INCONTACT, CERAMIC AND FERRITE WEAR SURFACES
2-3	READ/WRITE GAP	100 MICRO INCHES
2-4	CLEANING	THE HEAD CONSTRUCTION SHALL ALLOW PERIODIC CLEANING WITH METHYL-ALCOHOL OR 1-1-1 TRICHLOROETHANE WITHOUT HARM.

3. PERFORMANCE

3-1	TEMPERATURE RANGE	OPERATING	0~52°C
		STORAGE	-45~+71°C
3-2	HUMIDITY RANGE	OPERATING	8~80%RH
		STORAGE	NOCONDITIONING
3-3	DESIGN LIFE	1600 HOURS IN CONTACT WITH DISKETTE AT 18 G PRESSURE PAD FORCE	
3-4	PRESSURE PAD FORCE	18 ± 2 G A 0.197" DIAMETER PAD	
3-5	RECORDING METHOD	GCR	
3-6	RECORDING MEDIA	DATALIFE MD525-01	
3-7	HEAD/MEDIA VELOCITY	45~70.7 INCHES/SEC, AT 300 RPM	
3-8	DATA PACKING DENSITY	UP TO 5536 FCI AT 300 RPM ON TRACK 39	
3-9	WRITE CURRENT	7 MA P-P	
3-10	ERASE CURRENT	40 MA	
3-11	READ OUTPUT (THROUGH 1541 AMP)	190 MV P-P MIN. AT 5162 FCI (TR.34) 1.4 VP-P MAX. AT 1768 FCI (TR.00)	

3-12 RESOLUTION

$$\frac{E_{OUT}\ 5162\ FCI}{E_{OUT}\ 2581\ FCI} \geqq 0.55\ (TR.34)$$

$$\frac{E_{OUT}\ 3536\ FCI}{E_{OUT}\ 1768\ FCI} \leqq 0.95\ (TR.00)$$

3-13 OVERWRITE MODULATION — WRITE 1F (1768 FCI). THEN WRITE 2F (3536 FCI) THE RATIO OF 2F AMPLITUDE TO REMAINING (OVERWRITTEN) 1F IS 30 DB MIN.

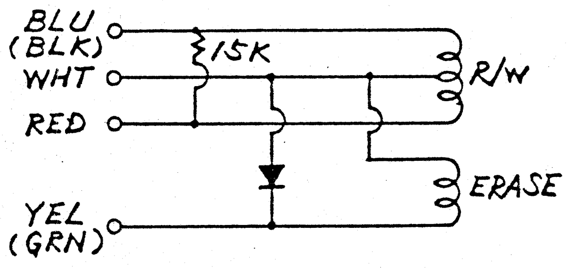
4. ELECTRICAL

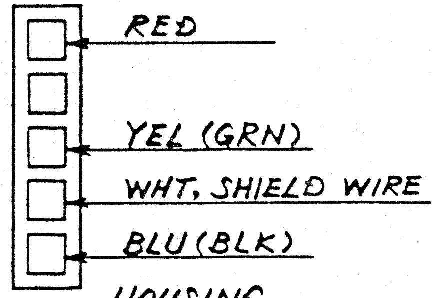
4-1	INDUCTANCE	READ/WRITE, PER LEG 600±120 μH BALANCE, LEG TO LEG 1±0.2 ERASE 1.5 MH
4-2	RESISTANCE	READ/WRITE, PER LEG 25 OHMS MAX. ERASE 20 OHMS MAX.
4-3	RESONANCE FREQUENCY	400 KHZ MIN.
4-4	INSULATION RESISTANCE	50 MOHMS MIN. (100V DC) BETWEEN COILS AND CORE
4-5	GROUNDING	BACK BAR OF R/W CORE SHALL BE ELECTRICALLY BONDED TO R/W CENTER TAP

5. TEST CONDITIONS

THE AMPLIFIER WHICH WILL BE USED TO TEST READ/WRITE PARAMETERS SHALL HAVE AN INPUT IMPEDANCE OF 15 KOHMS SHUNTED BY 20 PF

6. CONNECTOR PIN



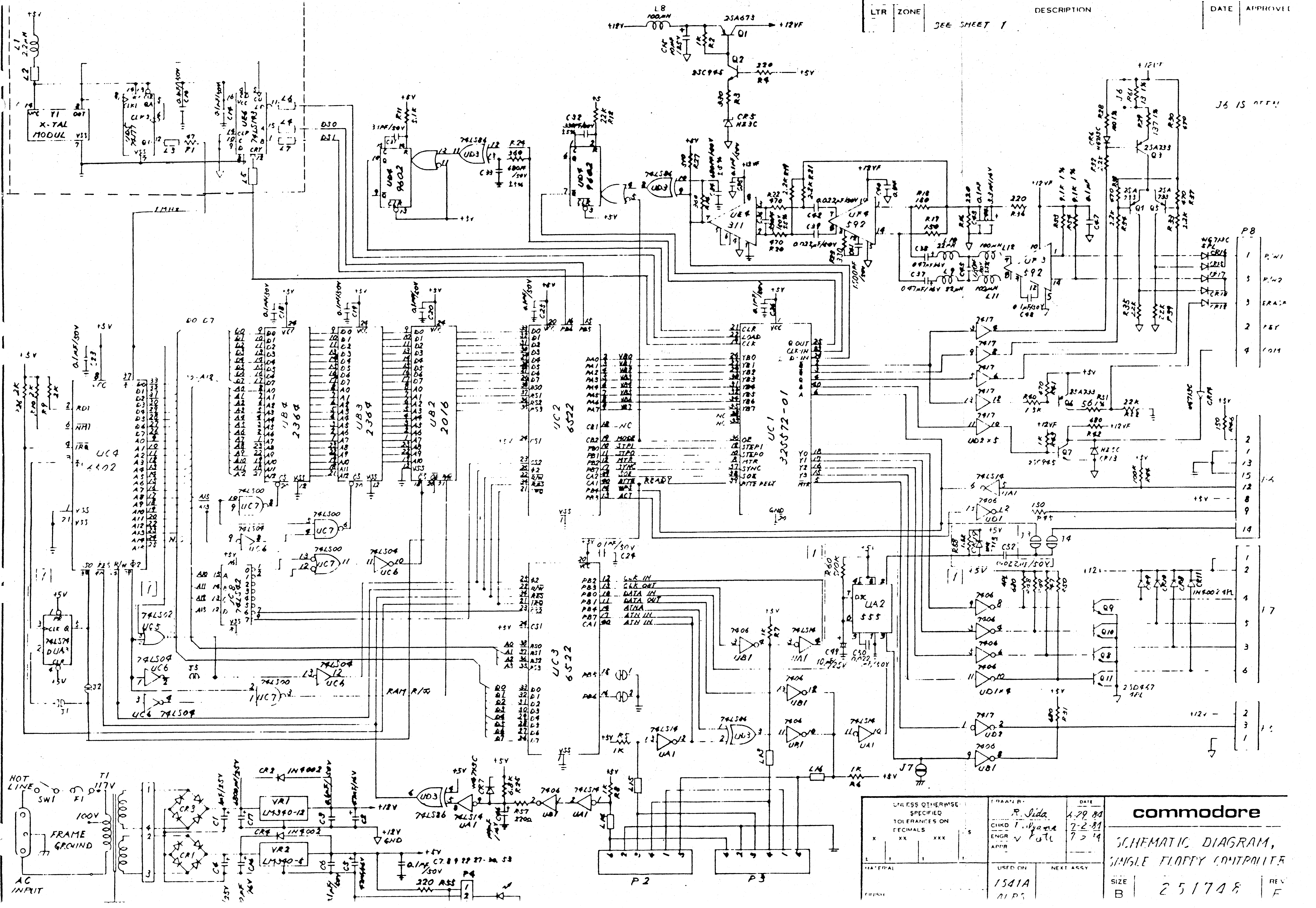


HOUSING
HIROSE HIF 3G-5S-254C
OR EQUIVALENT
TERMINAL
HIROSE HIF 3-2428SCFA
OR EQUIVALENT

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X ± .XX ± .XXX ± ∠'S ±	DRAWN BY: N. Hanamura	DATE 1-11-'84	commodore
	CHKD:	3/13/84	FLOPPY DISK NEWTRONICS
MATERIAL:	ENGR: S. Takahashi	3-14-84	
FINISH:	APPR	3-14-84	SIZE B · 251643 · REV E
	USED ON	NEXT ASSY	SCALE NONE · SHEET 3 OF 5

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

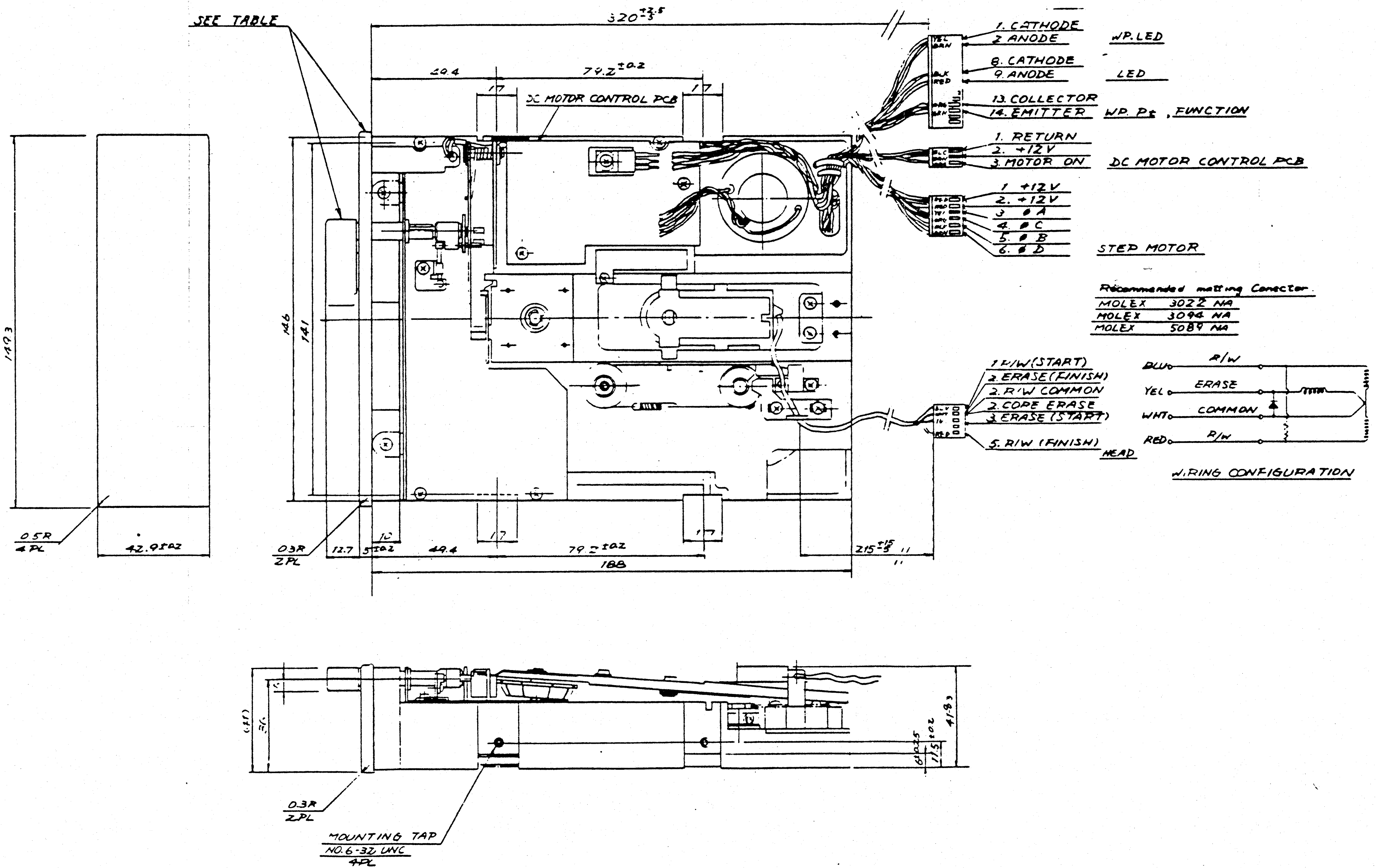


+5V
L1 2.2µH
L2
X-TAL MODUL
VCC Y1 OUT VSS
UE4 74LS193
L6 L4 L7 L5
DS0 DS1
1MHz
L8 100µH
+12V
2SA673 Q1
+12VF
Q2
2SC945
220 R4
+5V
R3 330
CR5 HZ3C
UD4 9602
UD3 74LS86
R24 360
R11 5.1K
C32
R12 22K
UE4 311
UF4 592
UF3 592
R18 160
R19 150
L10 22µH
L12 100µH
L9 22µH
L11 100µH
C38 C37
R36 220
J6 IS OPEN
+12VF
R61 13.1K
R29 137K
2SA733 Q3
CR6 HZ7.5C
2SA733 Q1 Q5
P8
P.W1
P.W2
ERASE
F.SY
COM
7417
UD2×5
R50 1.5K
Q6 2SA733
R51 56.1K
R52 680
Q7 2SC945
CR13 HZ5C
D0-D7
A0-A15
UC4 6502
RDY NMI IRQ
Φ2 R/W SO
UB4 2364
UB3 2364
UB2 2016
UC2 6522
UC1 325572-01
CLR LOAD CLK
YB0 YB1 YB2 YB3 YB4 YB5 YB6 YB7
OE STEP1 STEP0 MTR SYNC SOE BYTE READY
Q OUT CLK-IN D-IN
MODE STP1 STP0 MTR SYNC SOE BYTE ACT
UC7 74LS00
UC6 74LS04
UC5 74LS02
74LS74 DUAL
UC3 6522
UD 74LS42
CLK IN CLK OUT DATA IN DATA OUT ATNA ATN IN
RAM R/W
J1 J2 J3 J4 J5 J7
74LS14 UA1
7406 UB1
7406 UD1×4
UA2 555
C49 C50
2SD467 4PL
Q8 Q9 Q10 Q11
1N4002 4PL
P6 P7 P5
HOT LINE
SW1 F1 T1 117V 100V
FRAME GROUND
AC INPUT
CR3 CR1
CR2 1N4002
CR4 1N4002
VR1 LM340-12
VR2 LM340-5
+12V GND
C7,8,9,22,27-30,53
0.1µF/50V
220 R55
P4
R57 220Ω
L13 L14 L15 L16
R6 1K
P2 P3

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS X XX XXX S	DRAWN BY: R. Iida CHKD T. Oyama ENGR V Fato APPR	DATE 6-29 84 7-2-84 7 2 84	commodore
MATERIAL FINISH	USED ON 1541A ALPS	NEXT ASSY	SCHEMATIC DIAGRAM, SINGLE FLOPPY CONTROLLER
			SIZE B 251748 REV F

PART NO.	COLOR
251643-01	BROWN
251643-02	DARK GREY

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
1		SEE SHEET 1		



SEE TABLE
$320^{+3.5}_{-3}$
49.4
$79.2^{\pm0.2}$
17
17
DC MOTOR CONTROL PCB
149.3
146
141
0.5R
4PL
42.9±0.2
0.3R
2PL
12.7
5±0.2
10
49.4
17
79.2±0.2
17
188
215^{+15}_{-5}
1. CATHODE
2 ANODE
WP. LED
8. CATHODE
9. ANODE
LED
13. COLLECTOR
14. EMITTER
WP. Pt , FUNCTION
1. RETURN
2. +12V
3. MOTOR ON
DC MOTOR CONTROL PCB
1 +12V
2. +12V
3 ØA
4. ØC
5. ØB
6. ØD
STEP MOTOR
1 R/W (START)
2. ERASE (FINISH)
2. R/W COMMON
2. CORE ERASE
3 ERASE (START)
5. R/W (FINISH)
HEAD
BLU
YEL
WHT
RED
R/W
ERASE
COMMON
R/W
WIRING CONFIGURATION
YEL
BRN
BLK
RED
(41)
31
6±0.25
11.5±0.2
41.8
0.3R
2PL
MOUNTING TAP
NO.6-32 UNC
4PL

Recommended matting Conector.

MOLEX	3022 NA
MOLEX	3094 NA
MOLEX	5089 NA

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON
DECIMALS
.X .XX .XXX ∠'S
± ± ± ±
MATERIAL
FINISH

DRAWN BY X. Takase DATE 10-5-83
CHKD
ENGR
APPR
USED ON
NEXT ASSY

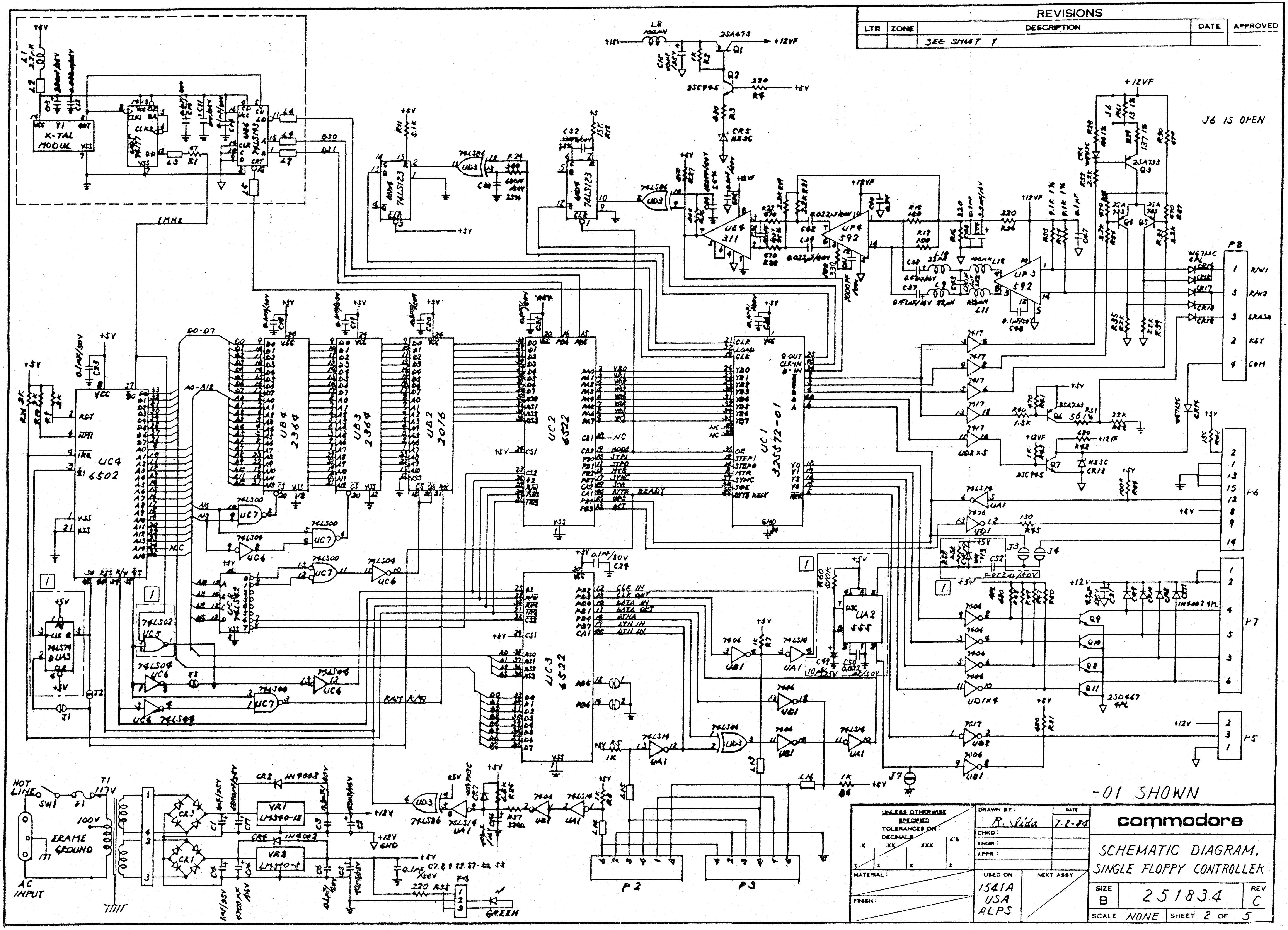
commodore

FLOPPY DISK
NEWTRONICS

SIZE D 251643 REV B
SCALE NONE SHEET 5 OF 5

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



+5V
L1 2.2μH
Y1 X-TAL MODUL
74LS193
74LS74
1MHz
DO-D7
A0-A12
UC4 6502
RDY
NMI
IRQ
VCC
VSS
R/W
UB4 2364
UB3 2364
UB2 2016
UC2 6522
UC1 325572-01
UC3 6522
UC7 74LS00
UC6 74LS04
UC5 74LS02
UA3 74LS74
UD3 74LS86
UB1 7406
UA1 74LS14
UA2 555
UD2 7417
UD1 7406
UE4 311
UF4 592
UF3 592
74LS123
L8 100μH
+12V
+12VF
2SA673 Q1
Q2 2SC945
R4 220
CR5 HZ3C
2SA733 Q3
Q4
Q5
Q6 2SA733
Q7 2SC945
CR13 HZ3C
Q8
Q9
Q10
Q11
2SD467
J1
J2
J3
J4
J7
P2
P3
P4
P5
P6
P7
P8
R/W1
R/W2
ERASE
KEY
COM
READY
BYTE READY
CLK IN
CLK OUT
DATA IN
DATA OUT
ATNA
ATN IN
RAM R/W
HOT
LINE
SW1
F1
T1
117V
100V
FRAME GROUND
AC INPUT
CR1
CR2 1N4002
CR3
CR4 1N4002
VR1 LM340-12
VR2 LM340-5
+12V GND
GREEN
220 R55

J6 IS OPEN

-01 SHOWN

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ±
.XX ±
.XXX ±
∠S ±

MATERIAL:

FINISH:

DRAWN BY: R. Iida
DATE 7-2-84
CHKD:
ENGR:
APPR:

USED ON
1541A
USA
ALPS

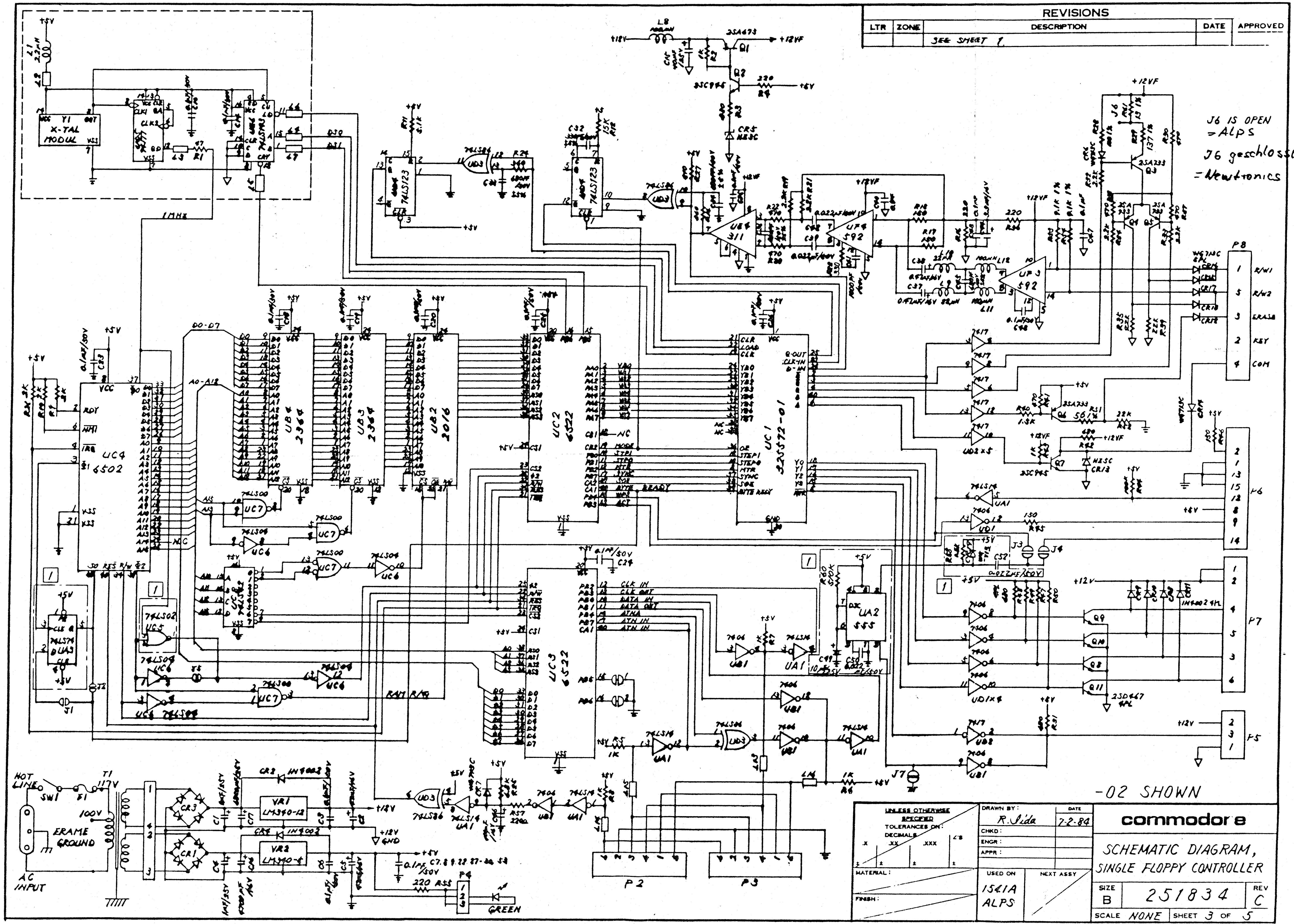
NEXT ASSY

commodore

SCHEMATIC DIAGRAM,
SINGLE FLOPPY CONTROLLER

SIZE B
251834
REV C

SCALE NONE
SHEET 2 OF 5


X-TAL MODUL
Y1
74LS193
74LS123
74LS86
UE4 311
UF4 592
UF3 592
2SA673
2SC945
2SA733
UC4 6502
UB4 2364
UB3 2364
UB2 2016
UC2 6522
UC3 6522
UC1 325572-01
UA2 555
74LS74
74LS00
74LS04
74LS02
74LS42
74LS14
7406
7417
VR1 LM340-12
VR2 LM340-5
CR1
CR3
T1
SW1
F1
HOT LINE
117V
100V
FRAME GROUND
AC INPUT
+12V
+5V
GND
GREEN
1MHZ
D0-D7
A0-A12
READY
RAM R/W
CLK IN
CLK OUT
DATA IN
DATA OUT
ATNA
ATN IN
P2
P3
P4
P5
P6
P7
P8
J1
J2
J3
J4
J7
R/W1
R/W2
ERASE
KEY
COM
2SD467
Q9
Q10
Q8
Q11

J6 IS OPEN = ALPS

J6 geschlossen = Newtronics

-02 SHOWN

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X .XX .XXX ∠'S

MATERIAL:

FINISH:

DRAWN BY: R. Iida DATE 7-2-84

CHKD:

ENGR:

APPR:

USED ON: 1541A ALPS

NEXT ASSY

commodore

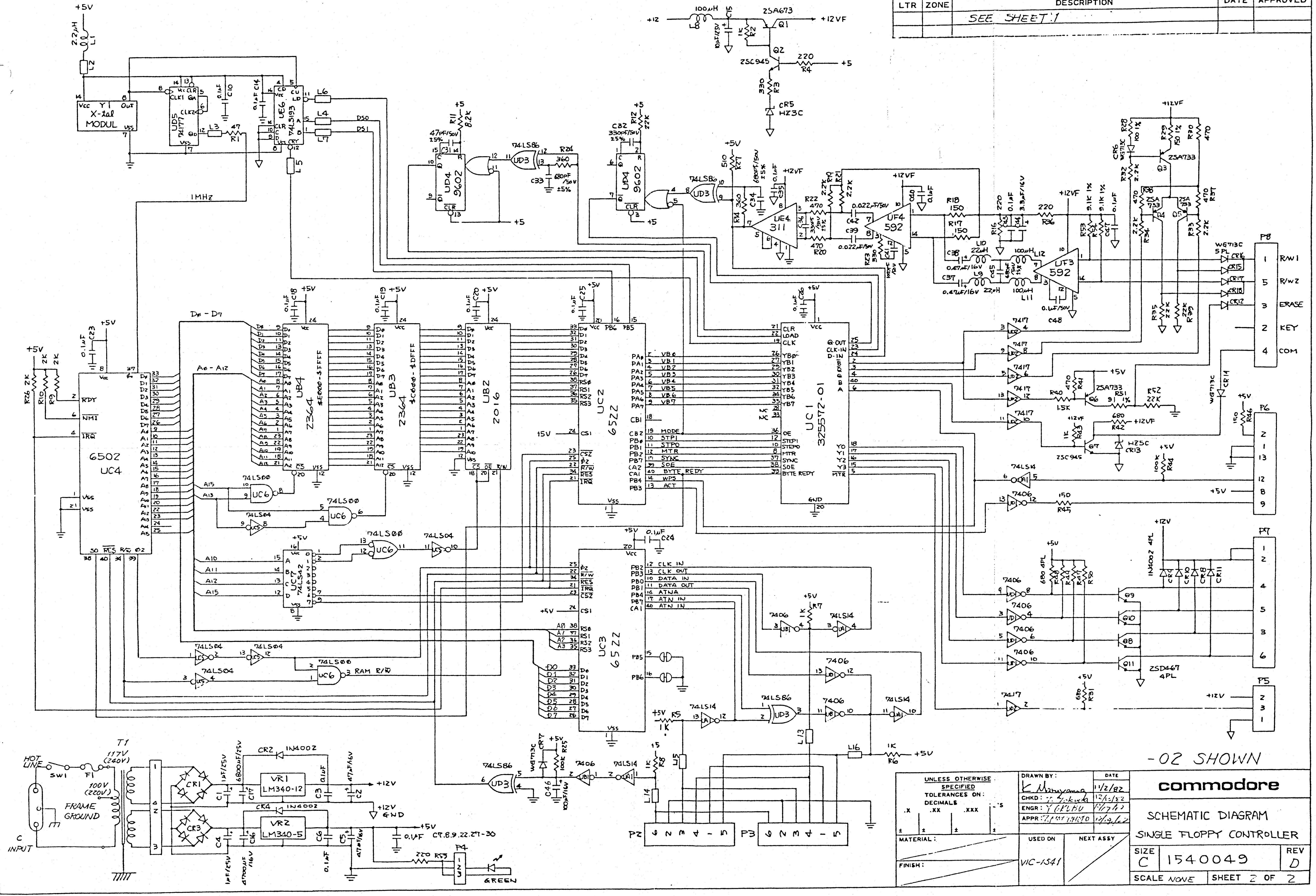
SCHEMATIC DIAGRAM, SINGLE FLOPPY CONTROLLER

SIZE B 251834 REV C

SCALE NONE SHEET 3 OF 5

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



+5V
2.2µH L1
L2
X-tal MODUL
Y1
UD5 74177
UE6 74LS193
L3
47 R1
L4
L5
L6
L7
DS0
DS1
0.1µF C10
0.1µF C14
1MHz
UD4 9602
74LS86
UD3
R11 8.2K
47pF/50V ±5% C31
R24 360
680pF/50V ±5% C33
C32 330pF/50V ±5%
R12 22K
+12
100µH L8
C15
10µF/25V
1K R2
2SA673 Q1
+12VF
Q2
2SC945
220 R4
330 R3
CR5 HZ3C
UE4 311
UF4 592
UF3 592
R18 150
R17 150
L10 22µH
L12 100µH
L9 22µH
L11 100µH
C48
2SA733 Q3
R28 100 1%
R29 150 1%
R30 470
Q4
Q5
R53 9.1K 1%
R54 9.1K 1%
WG713C 5PL
CR16
CR15
CR17
CR18
CR12
P8
R/W1
R/W2
ERASE
KEY
COM
D0 - D7
A0 - A12
6502 UC4
RDY
NMI
IRQ
UB4 2364 $E000-$FFFF
UB3 2364 $C000-$DFFF
UB2 2016
UC2 6522
UC1 325572-01
MODE
STP1
STP0
MTR
SYNC
SOE
BYTE REDY
WPS
ACT
74LS00
UC6
74LS04
74LS42 UC7
A10
A11
A12
A15
A13
UC3 6522
CLK IN
CLK OUT
DATA IN
DATA OUT
ATNA
ATN IN
RAM R/W
7417
2SA733
R52 22K
R51 91 1%
R40 1.5K
R42 680
HZ5C CR13
2SC945
WG713C CR14
P6
74LS14
7406
R45 150
P7
IN4002 4PL
CR9
CR10
CR8
CR11
Q9
Q10
Q8
Q11
2SD467 4PL
P5
R31 680
L13
L16
R6 1K
L15
L14
P2
P3
UB1
UA1
R7 1K
R5 1K
R8 1K
WG713C CR7
R25 100K
C46 100µF/16V
HOT LINE
SW1
F1
T1
117V (240V)
100V (220V)
FRAME GROUND
C INPUT
CR1
CR3
CR2 IN4002
CR4 IN4002
VR1 LM340-12
VR2 LM340-5
6800µF/25V C17
4700µF/16V C16
C1 1µF/25V
C4 1µF/25V
C3 0.1µF
C6 0.1µF
C2 47µF/16V
C5 47µF/16V
+12V
+12V GND
+5V
0.1µF C7,8,9,22,27-30
220 R53
P4
GREEN

-02 SHOWN

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ± .XX ± .XXX ± ∠'S ±

MATERIAL:

FINISH:

DRAWN BY: K. Maruyama — DATE 11/2/82
CHKD: [illegible] — 12/1/82
ENGR: Y. OKUBO — [illegible]
APPR: [illegible] — [illegible]

USED ON: VIC-1541
NEXT ASSY:

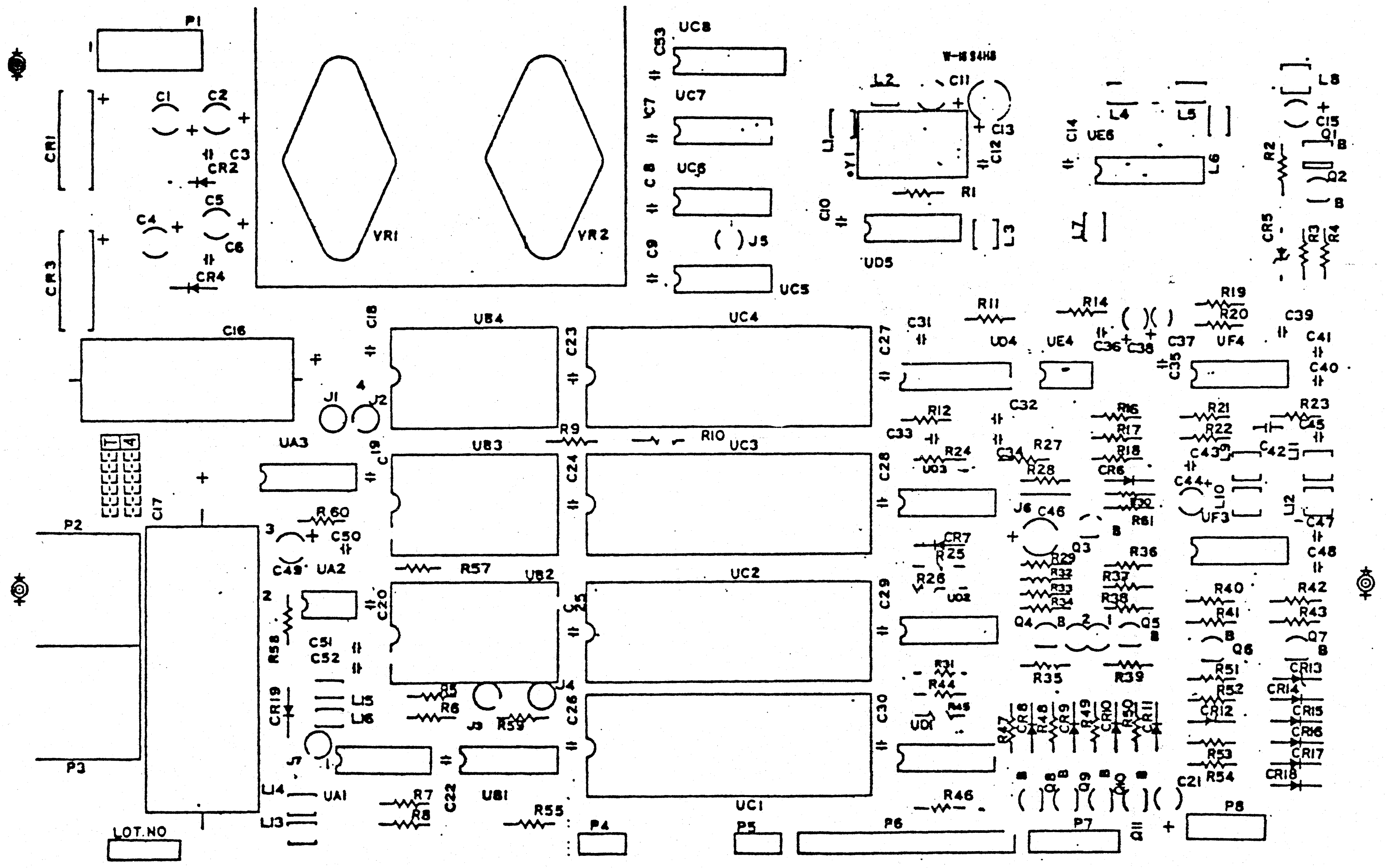
commodore

SCHEMATIC DIAGRAM
SINGLE FLOPPY CONTROLLER

SIZE C
1540049
REV D
SCALE NONE
SHEET 2 OF 2

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



P1
1
CR1
C1
C2
C3
CR2
C4
C5
C6
CR3
CR4
VR1
VR2
C53
UC8
C7
UC7
C8
UC6
C9
J5
UC5
W-18 S4H8
L2
C11
C13
L1
Y1
C12
R1
C10
UD5
L3
C14
UE6
L4
L5
L6
L7
L8
C15
Q1
B
R2
Q2
CR5
R3
R4
C16
J1
J2
4
C18
UB4
C23
UC4
C27
C31
R11
UD4
R14
UE4
C36
C38
C37
C35
R19
R20
UF4
C39
C41
C40
R23
C45
UA3
C19
UB3
R9
R10
UC3
C24
C28
R12
C32
C33
R24
UD3
C34
R27
R28
R16
R17
R18
CR6
R30
R61
R21
R22
C43
C42
C44
L9
L10
UF3
L11
L12
C47
C48
C17
P2
3
C50
R60
C49
UA2
R57
UB2
C20
C25
UC2
C29
CR7
R25
R26
UD2
J6
C46
Q3
R29
R32
R33
R34
R36
R37
R38
R40
R41
R42
R43
Q4
Q5
Q6
Q7
2
R58
C51
C52
R35
R39
R31
R44
R45
UD1
R51
R52
CR12
CR13
CR14
CR15
CR16
CR17
CR18
CR19
L15
L16
R5
R6
J3
R59
J4
C26
UC1
C30
R47
CR8
R48
CR9
R49
CR10
R50
CR11
R53
R54
C21
J7
P3
L14
L13
UA1
R7
R8
C22
UB1
R55
R46
P4
P5
P6
P7
Q8
Q9
Q10
Q11
P8
LOT. NO

SILKSCREEN

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS			∠'S
.X ±	.XX ±	.XXX ±	±
MATERIAL:			
FINISH:			

		DATE
DRAWN BY:		5-22-84
CHKD:	YN	5/28/84
ENGR:	S. Tabuchi	5-28-84
APPR:		5-31-84

USED ON | NEXT ASSY

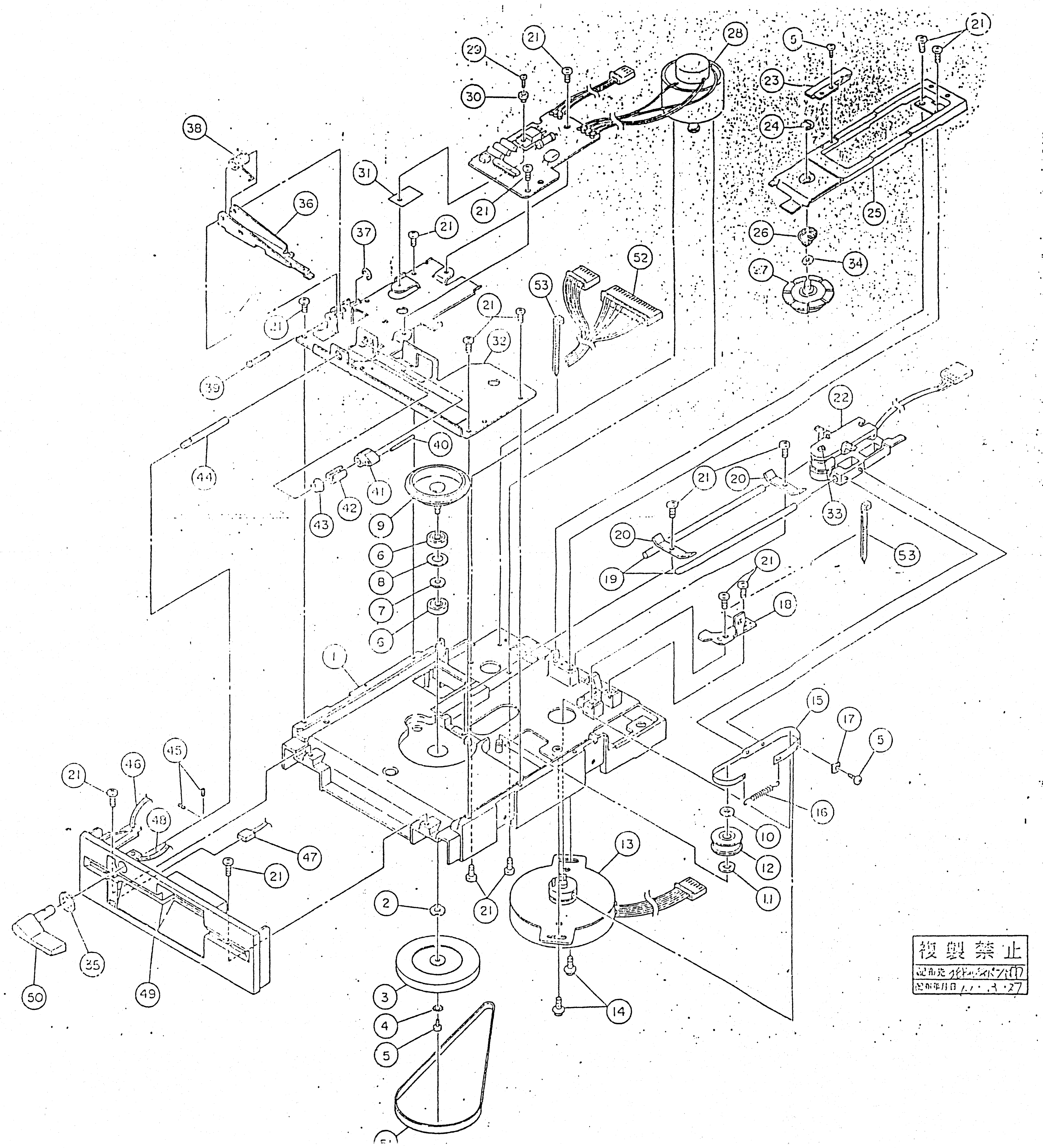
commodore

PCB, 1541A-2

SIZE		REV
B	251830	A

SCALE NONE | SHEET 4 OF 6

251834 C



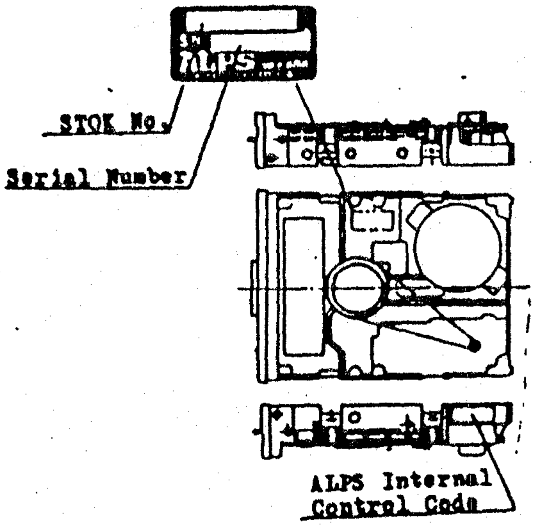
複製禁止
配布先 [illegible]
配布年月日 [illegible]・3・27

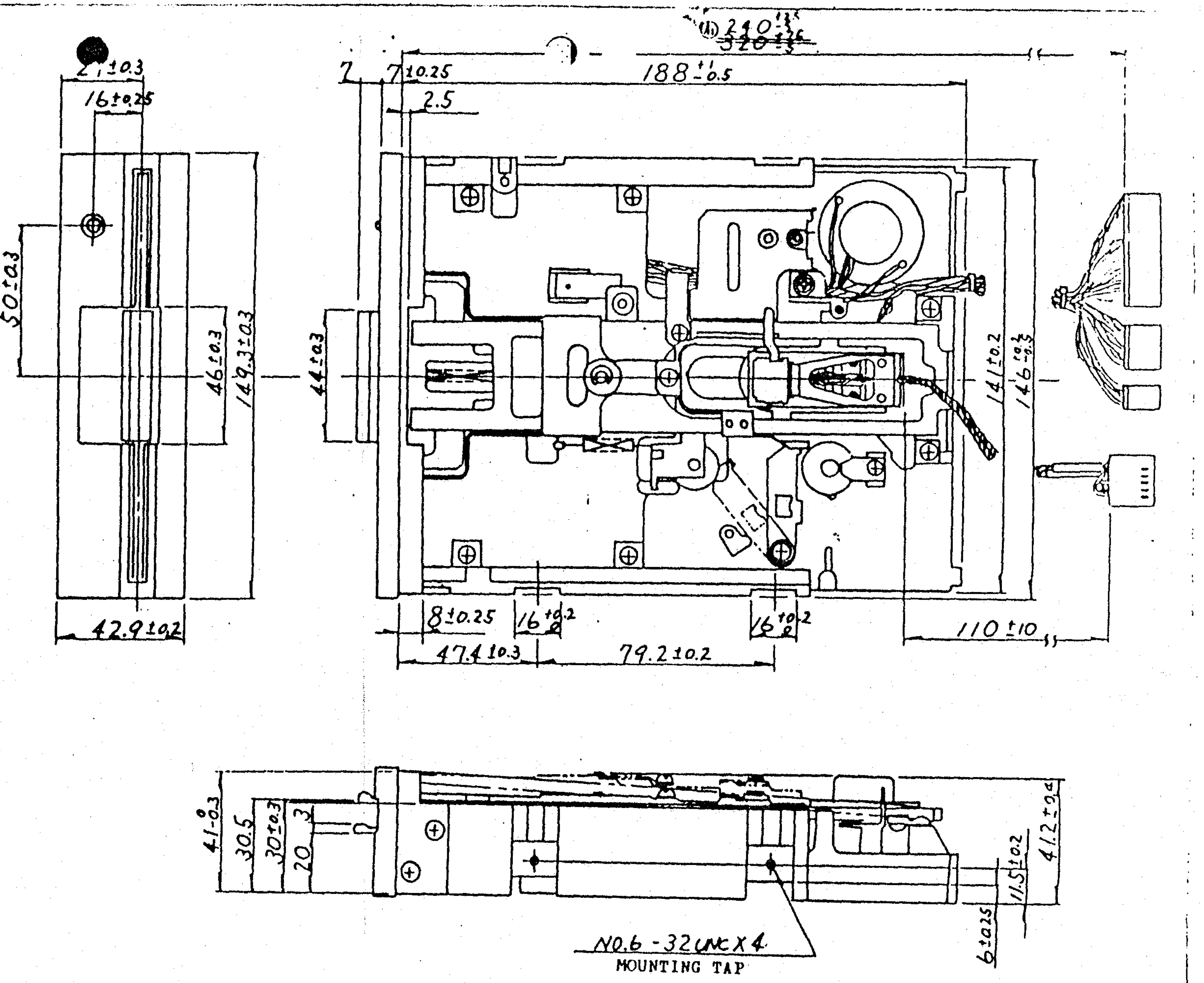
				2A	53	690073	FIXTURE BAND			
				1A	52	690074	CONNECTOR HOUSING			
				1A	51	690004	DRIVE BELT			
				1A	50	690010	DOOR LEVER ASSY			
				1A	49	690012	FRONT BEZEL			
				1A	48	690096	WPLED ASSY			
				1A	47	690094	LED ASSY			
				1A	46	690095	WPPT ASSY			
				2A	45	690060	SET SCREW HEXAGON	M3 ℓ・3		
				1A	44	690035	CRANK SHAFT			
				1A	43	690037	SPACER			
				1A	42	690036	COLOR			
				1A	41	690033	CAM			
				1B	40	690045	PARALLEL PIN	ℓ・20		
				1A	39	690030	CARRIER B PIN			
				1B	38	690031	CARRIER SCREW			
				1A	37	690056	RETAINING RING A			
				1A	36	690028	CARRIER B PLATE			
				1F	35	690026-F	THRUST WASHER			
				1A	34	690099	COLLET WASHER			
				1A	33	690048	PAT			
				1A	32	690027	CARRIER BASE			
				1A	31	690072	INSULATE SHEET			
				1A	30	690071	INSULATE RING			
				1A	29	690164	CROSS RECESSED SCREW	M2 ℓ・6		
				1A	28	690104	D MOTOR ASSY			
				1A	27	690091	COLLER ASSY			
				1A	26	690269	COLLET SPRING			
				1A	25	690089	CARRIER ASSY			
				1C	24	690056	RETAINING RING E			
				1A	23	690090	PAT ARM ASSY			
				1A	22	690080	CARRIDGE 2 ASSY			
				168	21	690005-B	PAN HEAD SCREW	M3 ℓ・4		
				2A	20	690043	GUIDE BAR CLUMP			
				2A	19	690042	GUIDE BAR			
				1A	18	690038	STOPPER			
				1A	17	690041	BELT CLUMPPER			
				1A	16	690040	STEEL BELT SPRING			
				1A	15	690039	STEEL BELT			
				2A	14	690102	CROSS RECESSED SCREW	M3 ℓ=4		
				1A	13	690079	STEPPING MOTOR ASSY			
				1A	12	690078	PULLEY B ASSY			
				1E	11	690026-E	THRUST WASHER			
				1D	10	690026-D	THRUST WASHER			
				1A	9	690052	SPINDLE HUB ASSY			
				1A	8	690051	RETAINING RING C			
				1A	7	690065	INNER WASHER			
				2A	6	690066	BEARING	NTN 695ZZ		
				4D	5	690005-D	PAN HEAD SCREW	M2.6 ℓ・3		
				1A	4	690101	EXTERNAL TOOTHED WASHER			
				1A	3	690053	SPINDLE DRUM			
				1A	2	690055	WAVE WASHER			
				1A	1	690076	FRAME UNIT			
E	D	C	B	A	部番	図番	部品名	摘要	[illegible]	[illegible]

R	R	R	R	R	第三角法	尺度	一般許容差	D 500 1541 FDD SCHEMATIC

NEWTRONICS

Label Position


ALPS
STOK No.
Serial Number
ALPS Internal Control Code


Ⓐ 240 +15 -5
~~320 +15 -5~~
188 +1 -0.5
7
7 ±0.25
2.5
21 ±0.3
16 ±0.25
50 ±0.3
46 ±0.3
149.3 ±0.3
44 ±0.3
42.9 ±0.2
141 ±0.2
146 +0.3 -0.3
8 ±0.25
16 +0.2 -0
16 +0.2 -0
47.4 ±0.3
79.2 ±0.2
110 ±10
41 +0 -0.3
30.5
30 ±0.3
20
3
11.5 ±0.2
41.2 ±0.4
6 ±0.25
NO.6-32UNC X 4
MOUNTING TAP

TOLERANCES UNLESS OTHERWISE SPEC.	
BASIC DIMENSIONS	TOLERANCES
UP 10 10	± 0.3
BETWEEN 10 TO 100	± 0.5
ABOVE 100	± 0.8
ANGULAR DIMENSIONS ± 3°	

CUSTOMER
コモドール ジャパン (株)

ZONE	SYMB.	DATE	APP	AKD.	DSGD.
	Ⓐ1	Sep 9 '83			9.21

CUSTOMER P/N
———

	UNIT	SCALE
APPD.	CHKD.	DSGD.
Aug 21 '83	Aug 25 '83	Aug 25 '83

SAMPLE NO
E6164912M
FDM 2224
TITLE ASSEMBLY DRAWING
DOCUMENT NO.

NOTES 1. APPLY THE SPEC. OF FDM2224.

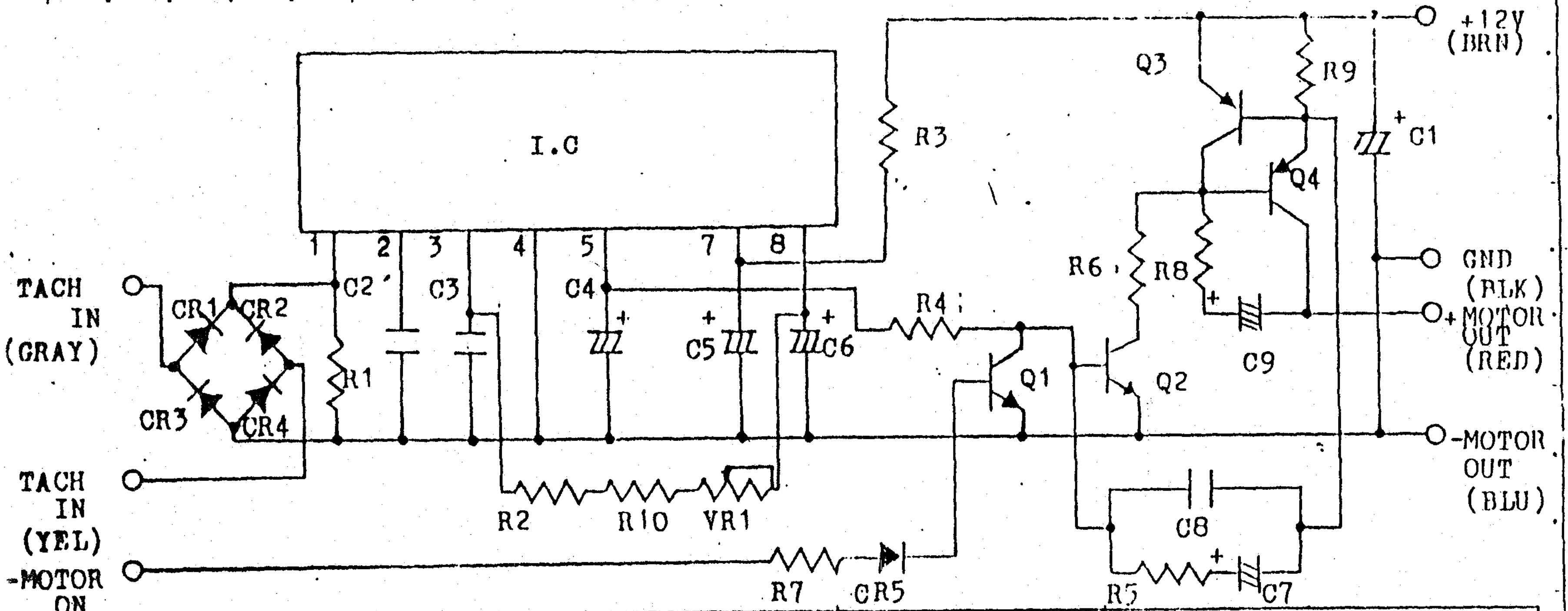
DWG. NO.

TITLE

FLOPPY DISK DRIVE SPECIFICATION

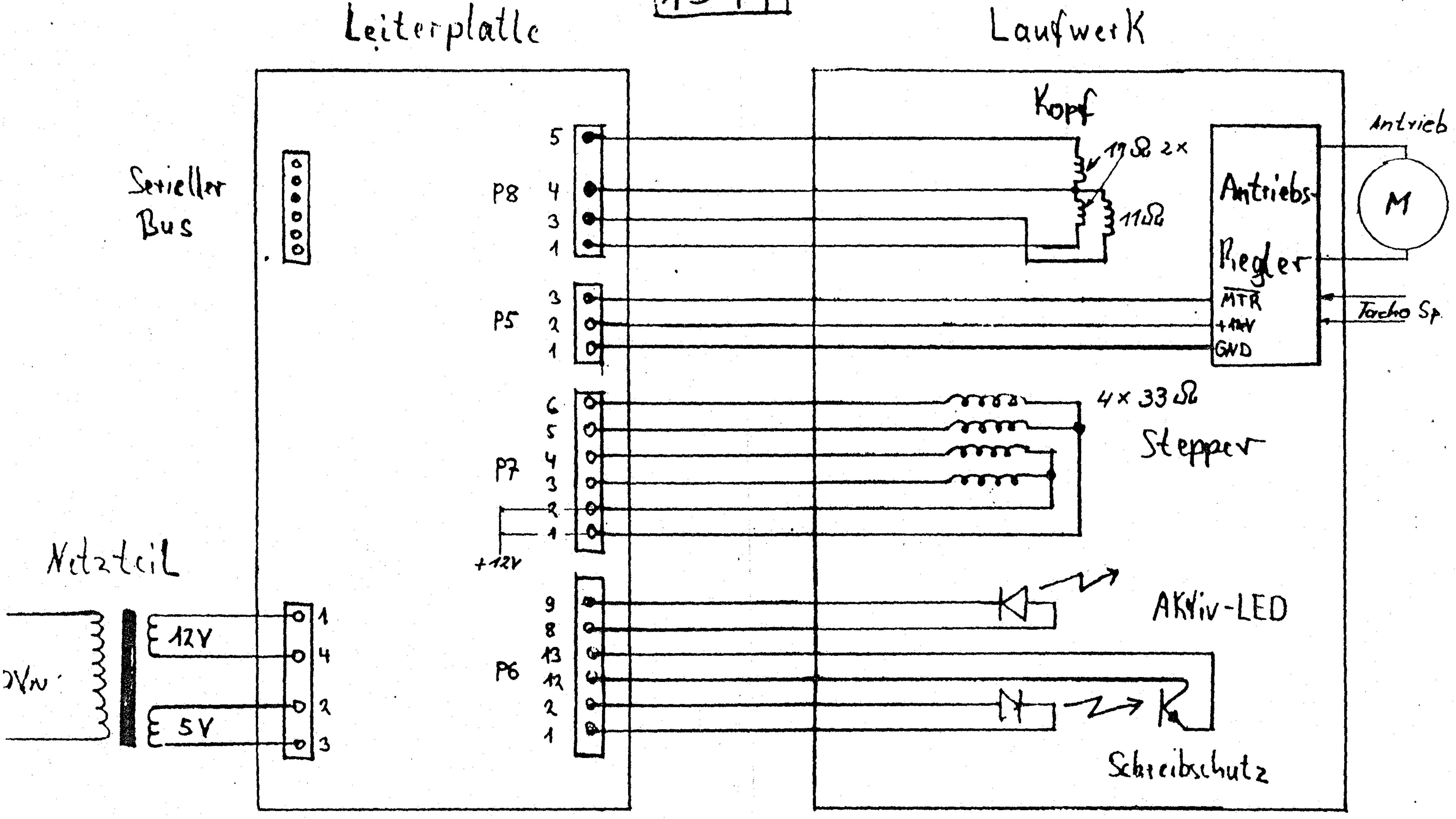
FDM2224

4. Motor Control P.C.B


+12V (BRN)
GND (BLK)
+MOTOR OUT (RED)
-MOTOR OUT (BLU)
TACH IN (GRAY)
TACH IN (YEL)
-MOTOR ON (ORG)
I.C
1
2
3
4
5
7
8
C1
C2
C3
C4
C5
C6
C7
C8
C9
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
VR1
Q1
Q2
Q3
Q4
CR1
CR2
CR3
CR4
CR5
+

Symbol	Description	Symbol	Description
I.C	CX-065B	R8	Resistor,150Ω1/4W
Q1	Transistor	R9	Resistor,0.68Ω2W
Q2	Transistor	R10	Resistor,5.1KΩ 1/8W
Q3	Transistor	VR1	Variable Resistor,20KΩ
Q4	Transistor	C1,5,6	Capacitor,10μF35V
CR1,2,3,4,5	Diode	C2	Capacitor,0.0047μF50V
R1,7	Resistor,1KΩ1/4W	C3	Capacitor,0.033μF50V
R2	Resistor,68KΩ1/4W	C4,9	Capacitor,0.47μF35V
R3	Resistor,220Ω1/4W	C7	Capacitor,2.2μF16V
R4	Resistor,3.3KΩ1/4W	C8	Capacitor,0.068μF50V
R5	Resistor,2.7KΩ1/4W		
R6	Resistor,820Ω1/4W		

1541


Leiterplatte
Laufwerk
Kopf
17Ω 2x
11Ω
Antriebs-Regler
MTR
+12V
GND
Antrieb
M
Tacho Sp.
4 x 33Ω
Stepper
AKtiv-LED
Schreibschutz
Serieller Bus
P8
5
4
3
1
P5
3
2
1
P7
6
5
4
3
2
1
+12V
P6
9
8
13
12
2
1
Netzteil
12V
5V
1
4
2
3

commodore
COMPUTER

SERVICE-INFO 7/84

Umbauvorschrift FLOPPY 1540/1541

Bei einigen Geräten vom Typ C64 trat ein Defekt an den Peripheriebausteinen auf, wenn nicht eine bestimmte Anschlußreihenfolge eingehalten wurde (erst Peripherie-Kabel,dann Netz-Kabel). (Siehe Seite 11 unten)

Ferner wurde der Datenbus zeitweise blockiert, wenn mehrere Peripheriegeräte gleichzeitig betrieben wurden (z.B. zwei Floppies oder Floppy und Drucker).

Die Ursache hierfür lag am RESET-Verhalten und am Betriebssystem der 1541 Floppy.

Um diese Mängel zu beseitigen gelten folgende Umbauvorschriften:

Seite 2 bis 4 :	lange Platinenausführung PCB No. 1540007 Rev.A bis Rev.E
Seite 5 bis 7 :	kurze Platinenausführung PCB No. 1540050 ab Rev.A

Folgende Testprogramme sind für die Floppy 1541 erhältlich:

970140.c	sfterr	Softerrortest	(C64)
970141.a	sfterr	Softerrortest	(VC20 mit 16 K)
970106.c	sfteff	Softerrortest mit Stoptest	(C64)
970150.a	fintst	Finaltest	(C64)
970127.a	alpadj	ALPS Drive Adjustment	(C64)
ary-03		Stop Adjustment	(C64 oder VC20)
f3-03		Finaltest mit Kompatibilitätstest	(VC20 mit 3 K)
970140.c15	sftary	für Tests nach dem Umbau	(C64)

commodore
COMPUTER

SERVICE-INFO

1) Zeitkonstante UG3 :

	Original	ersetzen durch
R 26	2,2 kOhm	5,1 kOhm
C 33	150 pF	33 pF

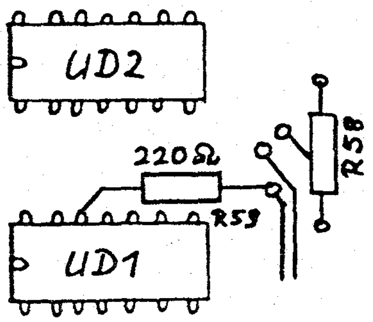
2) RESET - Schaltkreis :

	Original	ersetzen durch
R 43	100 kOhm	6,8 kOhm
R 59	nicht vorhanden	220 Ohm

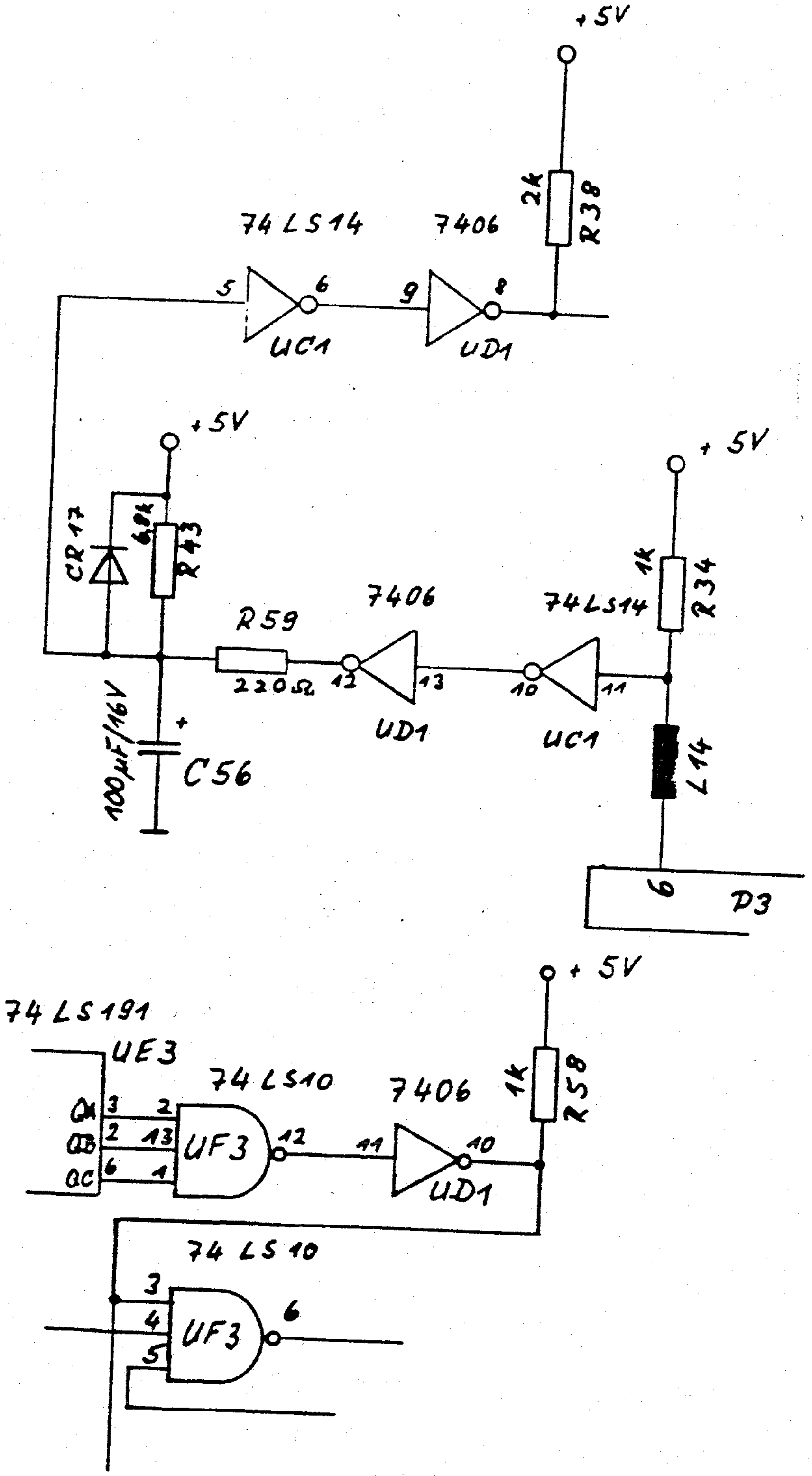
3) DOS - Rom :

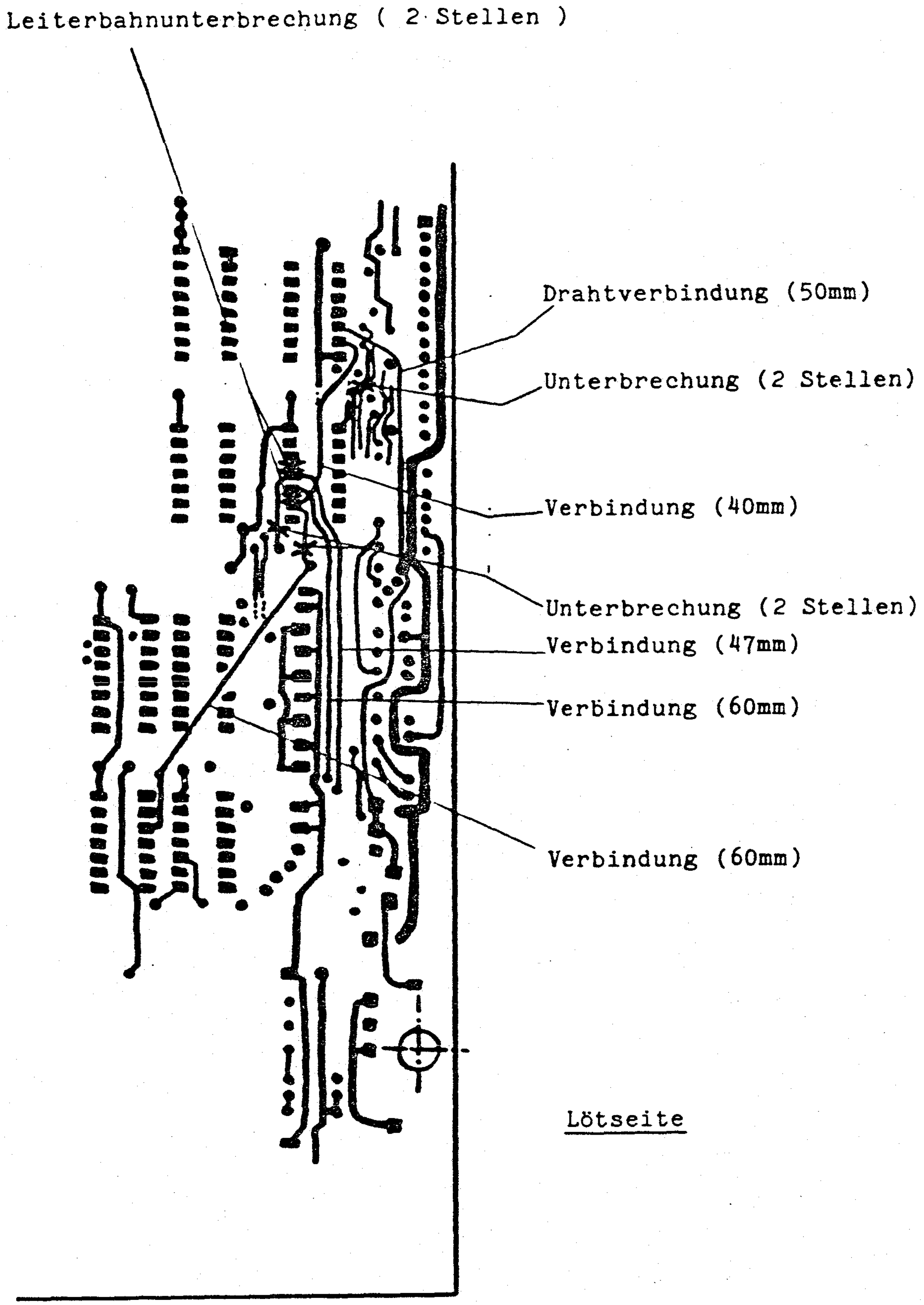
	Original		ersetzen durch	
UAB 5	901229-03 (1541)		901229-05 AE	EPROM mit
oder	325303-01 (1540)	oder	901229-06 AA	Adapter
		bzw.	901229-05	ROM

4) Einbauhinweis zu R 59 :



Der neue RESET - Schaltkreis :


+5V
2k
R38
74LS14
7406
5
6
9
8
UC1
UD1
+5V
CR17
6,8k
R43
+5V
1k
R34
7406
74LS14
R59
220Ω
12
13
10
11
UD1
UC1
+
100µF/16V
C56
L14
6
P3
+5V
74LS191
UE3
74LS10
7406
1k
R58
QA
QB
QC
3
2
6
2
13
1
UF3
12
11
10
UD1
74LS10
3
4
5
UF3
6


Leiterbahnunterbrechung (2 Stellen)
Drahtverbindung (50mm)
Unterbrechung (2 Stellen)
Verbindung (40mm)
Unterbrechung (2 Stellen)
Verbindung (47mm)
Verbindung (60mm)
Verbindung (60mm)
Lötseite

SERVICE-INFO

1) Zeitkonstante UD4 :

	Original	ersetzen durch
R 11	2,2 kOhm	5,1 kOhm
C 31	150 pF	33 pF

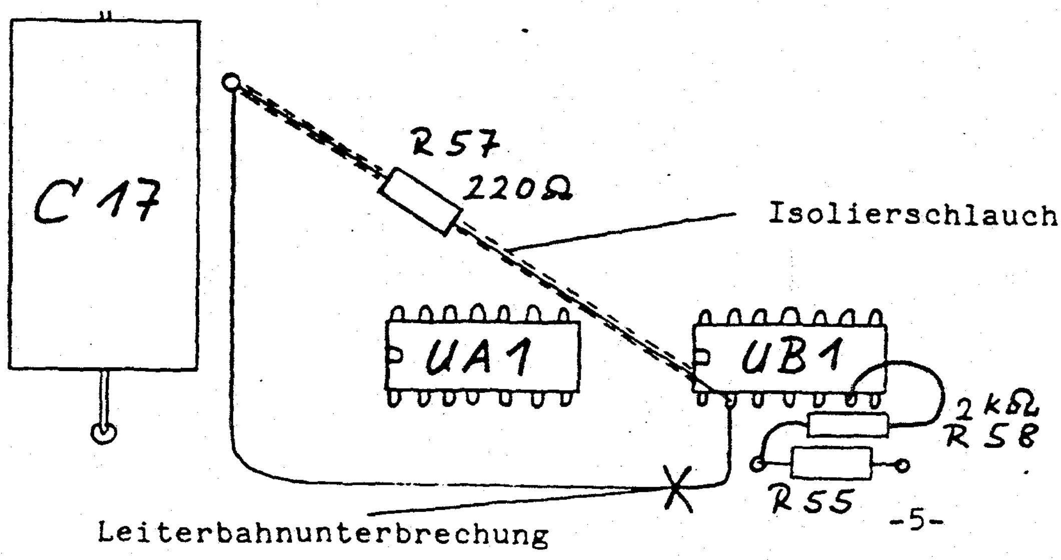
2) RESET - Schaltkreis :

	Original	ersetzen durch
R 25	100 kOhm	6,8 kOhm
R 57	nicht vorhanden	220 Ohm
R 58	nicht vorhanden	2 kOhm

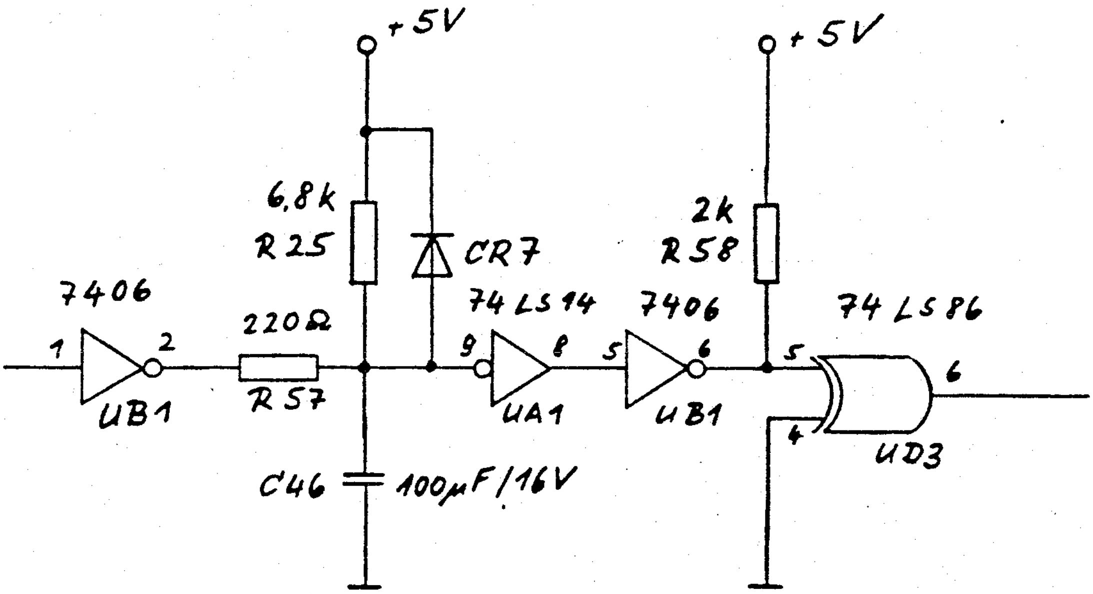
3) DOS - Rom :

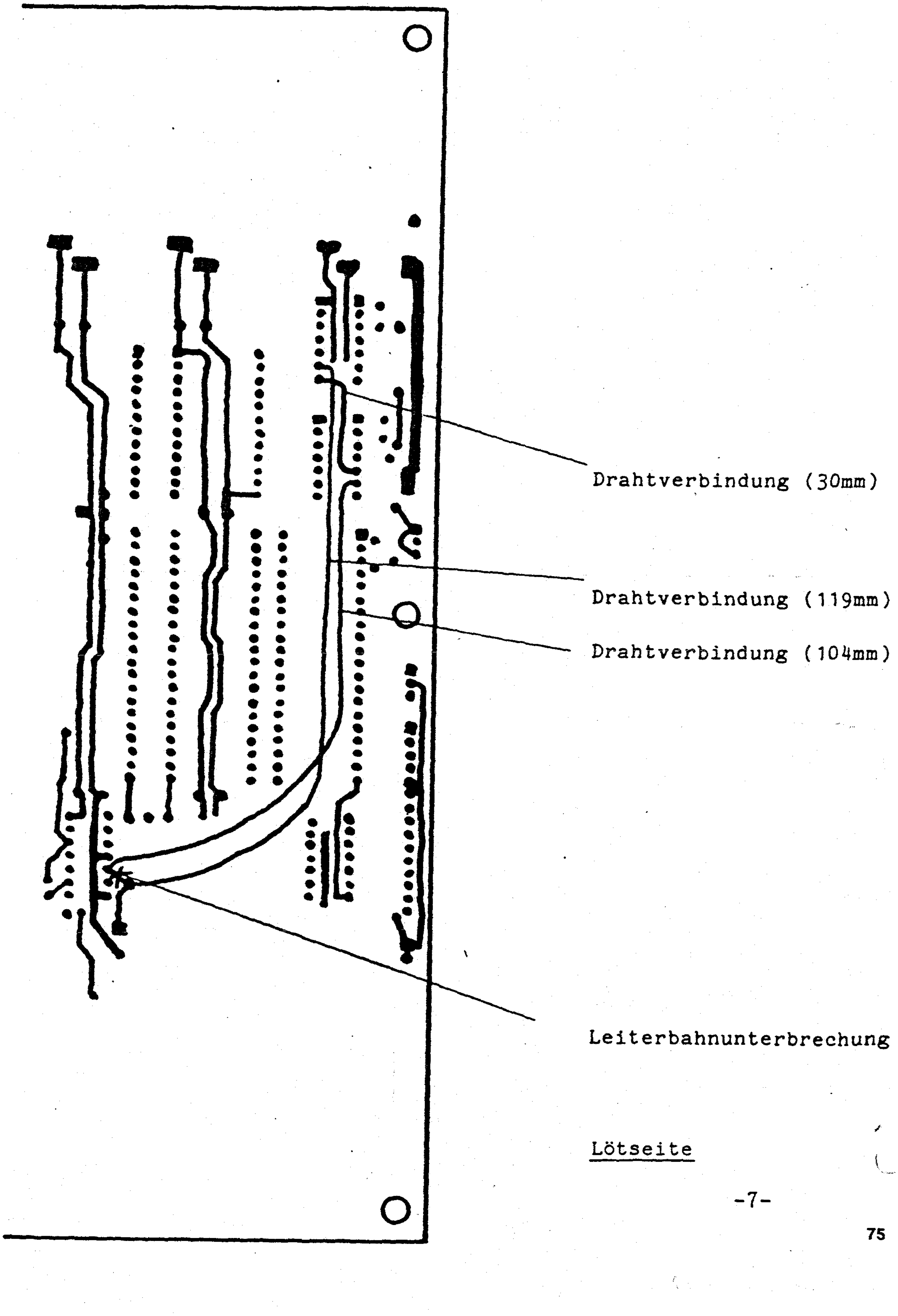
	Original		ersetzen durch	
UB 4	901229-03		901229-05 AE	EPROM mit
		oder	901229-06 AA	Adapter
		bzw.	901229-05	ROM

4) Einbauhinweis zu R 57 und R58 :


C 17
R 57
220Ω
Isolierschlauch
UA 1
UB 1
2 kΩ
R 58
R 55
Leiterbahnunterbrechung

Der neue RESET - Schaltkreis :


+5V
+5V
6,8k
R25
CR7
2k
R58
7406
1
2
UB1
220Ω
R57
74LS14
9
8
UA1
7406
5
6
UB1
74LS86
5
4
6
UD3
C46
100µF/16V


Drahtverbindung (30mm)
Drahtverbindung (119mm)
Drahtverbindung (104mm)
Leiterbahnunterbrechung

Lötseite

Hinweis zum DOS:

Durch ein Versehen wurde in einige umgebaute Floppies 1541 ein EPROM 2764 mit der Bezeichnung 901229-05 Ae eingesetzt. Dieses hat die gleichen Fehler wie das ROM 901229-03 und muß wie unter Punkt 3 beschrieben ausgetauscht werden.

Die Version 901229-05 AE hat noch einen Fehler, der jedoch nur durch Abbruch des Formatierens (z.B. durch Öffnen der Laufwerksklappe) auftritt: Beim nächsten Formatierversuch fehlen die ersten Spuren, ohne daß eine Fehlermeldung erscheint. Nach einem solchen Abbruch sollte deshalb die Floppy aus- und wieder eingeschaltet oder folgende Zeile vor dem nächsten Formatierbefehl abgeschickt werden:

```
OPEN1,8,15:PRINT#1,"M-W"CHR$(81)CHR$(0)CHR$(1)CHR$(255):CLOSE1
```

Laufwerk

Das Laufwerk wurde geändert, um das Verstellen von Stopeinstellung und Alignment bei Erwärmung zu verhindern.
Außerdem wurde der Luftspalt der Stopeinstellung vergrößert. Die neuen Laufwerke sind wie folgt gekennzeichnet:

A) Seriennummer > 00938841 oder

B) Markierung (grüner Strich) auf der Oberseite des Laufwerks neben dem Befestigungspunkt für die Spiralfeder!

Interfacestecker

Sollte der Interfacestecker schwergängig sein, kann dies durch folgende Handgriffe korrigiert werden:

- Die sechs Befestigungsschrauben des Chassis im Boden lockern.
- Befestigungsschrauben festziehen.
- Falls erforderlich, Deckel vor dem Festziehen nach rechts drücken.

Tests nach dem Umbau

Stopring:

Für die Kontrolle und Justage der Stopeinstellung dienten folgende Programme:

Alte Laufwerke (0,25 mm Luftspalt): 970127 (Step 6)
Neue Laufwerke (0,35 mm Luftspalt): ARY-03 (Stop Limit Test)

Justage: Die Stopeinstellung ist grundsätzlich mit dem Testprogramm ARY-03 zu testen und evtl. zu justieren (auf 0.35 mm Luftspalt). Nach der Justage Schraube mit Lack sichern.

Track-1-Test: Mit dem Testschritt S des Testprogramms 970106.C ist die Stopeinstellung zu überprüfen. Dazu muß eine Track-1-Diskette verwendet werden.

Track-1-Diskette: Diese Diskette erzeugt man durch folgendes Verfahren:

- Physikalisches Löschen einer Diskette im äußeren Bereich (z.B. mit kräftigem Permanentmagnet, Löschung mit Oszilloskop am Leseverstärker überprüfen!).

- Formatieren von Spur 1. Dies sollte mit einem im Alignmet kontrollierten Drive erfolgen.
  (Kommando: `open1,8,15,"n0:x,00)`
  Sofort nachdem der Schreib-/Lesekopf auf Spur 2 positioniert hat, ist die Laufwerksklappe zu öffnen.

SERVICE-INFO

Softerrortest: 2 Passes mit Programm 970140.C, in dem Zeile 1080 geändert wurde: NP=002

Starten des Programms mit RETURN

Testdauer: 8 min.

Am Ende muß die rote LED 1 x blinken = OK.

2 x blinken = zu viele Fehler im 1. Pass

3 x blinken = kein Zugriff zur LOG-Datei

4 x blinken = Abbruch beim Formatieren

Nach Aus- und Einschalten der Floppy mit 0 die LOG-Datei auslesen.

Es muß erscheinen:

```
Summary of Drive 0
Number of Passes: 2
Total Errors = 0
Countable Errors = 0
```

HINWEIS: Um Ausfälle infolge von Zentrierfehlern zu vermeiden, sollte die Laufwerksklappe langsam während des Drehens geschlossen werden (z.B. unmittelbar nach dem Einschalten der Floppy).

Da der Antriebsriemen bei Kälte schlecht haftet, sollte die Floppy vor dem Test Raumtemperatur haben.

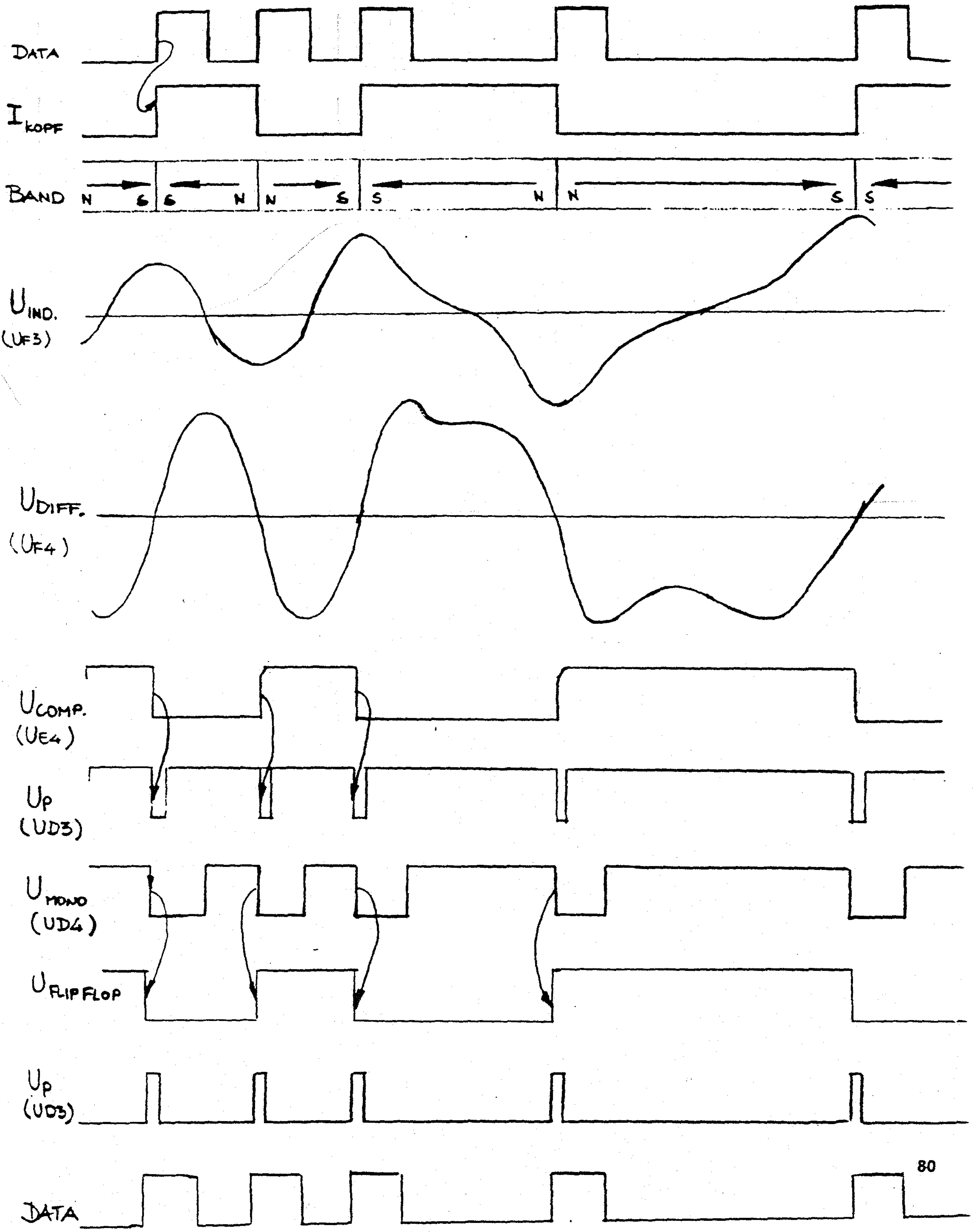
Für die Kontrolle des Alignments dient das Programm 970127(STEP 5: Alignment Test). Als Alignmentdiskette läßt sich auch eine 8050/8250 Alignmentdiskette verwenden, wenn auf das Sync-Signal zum Triggern des Oszilloskops verzichtet wird.

ACHTUNG: Der C64 und die anzuschließenden Fernseher entsprechen der Schutzklasse 2, während die Floppy 1541 mit dem Chassis auf Erde liegt. Dadurch kann der Portbaustein 6526 (U2) im C64 bei häufigem Verbinden und Trennen des Interfacesteckers (z.B. beim Softerrortest) zerstört werden. Um dies zu vermeiden, ist die Masse des C64 auf Erde zu legen (z.B. über das Halteblech am Cartridge-Stecker) oder Schutzdioden in den C64 einzulöten (siehe Bild S. 12).

SIGNALVERLAUF DER DATEN

1541

(ANALOG - TEIL)


DATA
I KOPF
BAND
N
S
S
N
N
S
S
N
N
S
S
U IND.
(UF3)
U DIFF.
(UF4)
U COMP.
(UE4)
Up
(UD3)
U MONO
(UD4)
U FLIPFLOP
Up
(UD3)
DATA

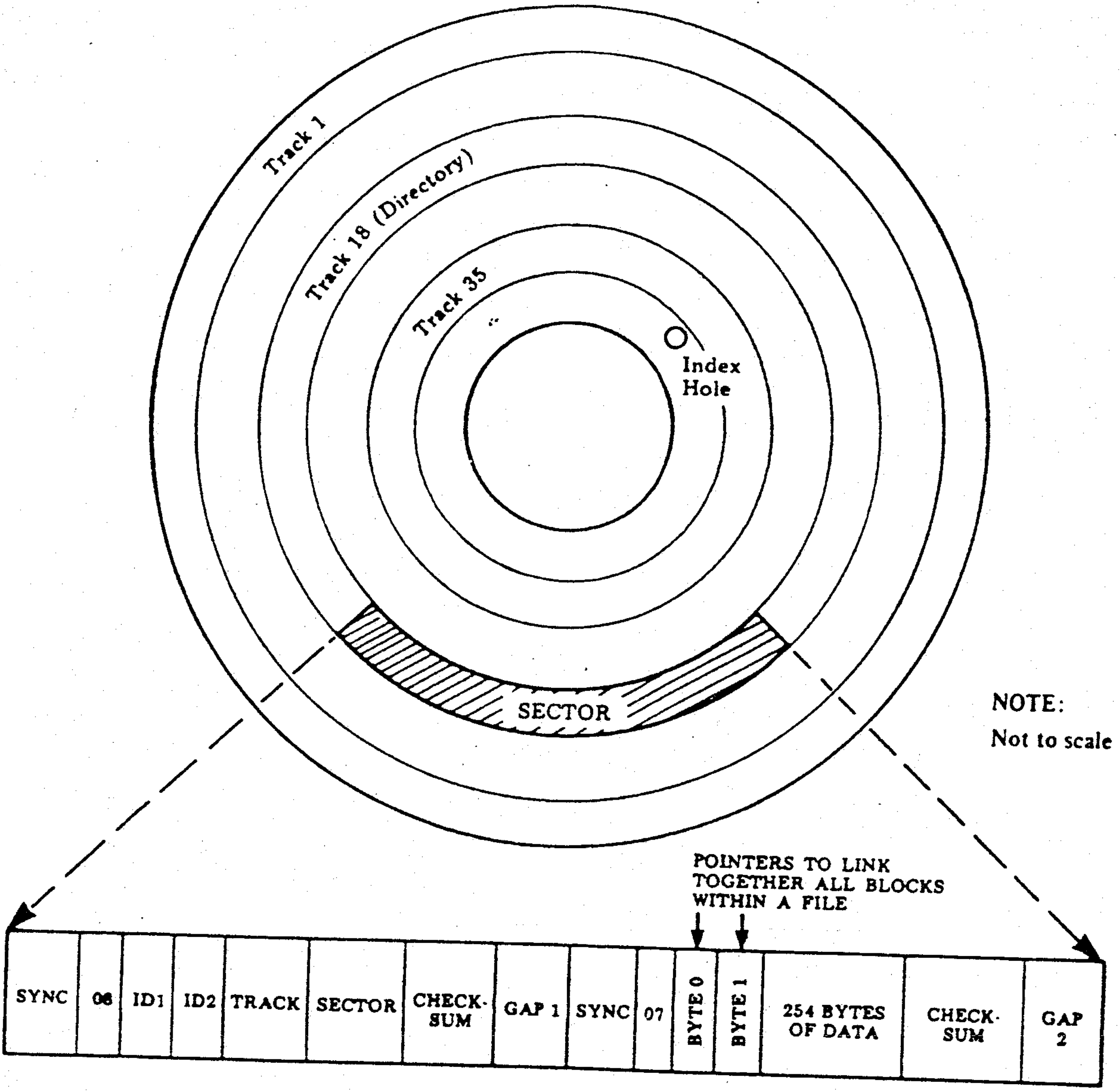

Track 1
Track 18 (Directory)
Track 35
Index Hole
SECTOR
NOTE:
Not to scale
POINTERS TO LINK TOGETHER ALL BLOCKS WITHIN A FILE
SYNC
08
ID1
ID2
TRACK
SECTOR
CHECK-SUM
GAP 1
SYNC
07
BYTE 0
BYTE 1
254 BYTES OF DATA
CHECK-SUM
GAP 2

Table 6. Block Distribution By Track

2040, 3040 Track number	Block or Sector Range	Total
1 to 17	0 to 20	21
18 to 24	0 to 19	20
25 to 30	0 to 17	18
31 to 35	0 to 16	17
4040 Track number	**Block or Sector Range**	**Total**
1 to 17	0 to 20	21
18 to 24	0 to 18	19
25 to 30	0 to 17	18
31 to 35	0 to 16	17
8050 Track number	**Block or Sector Range**	**Total**
1 to 39	0 to 28	29
40 to 53	0 to 26	27
54 to 64	0 to 24	25
65 to 77	0 to 22	23

SERVICE-INFORMATION

Betr.: PCB-ASSY 250442 und 250446 CBM 1541
Motoranlauf beim Einlegen der Diskette
Bedeutung der Jumper J1 bis J7 BSW, 09.11.84

Auf den oben angegebenen Leiterplatten befinden sich nicht bestückte Bauteilepositionen. Nach der Bestückung folgender Positionen bewirkt ein von der Schreibschutzlichtschranke erzeugtes Signal, daß der Antriebsmotor beim Einlegen einer Diskette ca. 6 Sekunden lang dreht. Dadurch ist ein besseres Zentrieren der Diskette gewährleistet, wenn die Laufwerksklappe innerhalb dieser Zeit geschlossen wird.

Position	Bauteil	Kommentar
UA2	NE555	Timer
R58	1.5k	Widerstand
R60	510k	Widerstand
C49	10uF/25V	Elko
C50	22nF/50V	Kondensator
C52	22nF/50V	Kondensator
CR19	1n4148	Diode
J3		geschlossen
J4		offen
J7		offen

Die Jumper J1, J2 und J5 sollten nicht nachträglich verändert werden, sie sind normalerweise geschlossen. Falls die Positionen UA3 und UC5 bestückt sind, sind J2 und J5 offen.
Der Jumper J6 paßt den Schreibstrom an den jeweiligen Laufwerkstyp an.

Laufwerk	ALPS	NEWTRONICS
J6	offen	geschlossen

Die gültigen Schaltunterlagen haben folgende Nummern:
251748 Rev.E (1541A, PCB-ASSY 250442, PCB-Nr.251777, UD4=9602)
251834 Rev.C (1541A-2,PCB-ASSY 250446, PCB-Nr.251830, UD4=74LS123)

MIT ALPS LAUFWERKEN

Mit C - 64

"970106.c	sfterr"	Schreib/Lese Dauertest + Geschwindigkeitstest + Stopkragen-Einstellung + Blinktest
"970127.a	alpadj"	Laufwerk Justage Alignment
"970150.a	fintst"	Ausdruck des sfterrtest
"970140.c	sfterr"	Schreib/Lese Dauertest + Geschwingigkeit

"970140.c15 sftary"	Schreib/Lese Dauertest(2Läufe) +Stopkragen Justage +Spur 1 Test
"Einstellprogramm"	Laufwerk-Justage Alignment

Mit VC - 20

"970141.a	sfterr"	Schreib/Lese Dauertest nur mit 16 K Erweiterung
"ary - 03"		Stopkragen Justage C 64 + VC 20
"f3 - 03"		Stopkragen Justage + LED Kontrolle + Schreib/Lesetest (Kompatibilität) nur mit 3K Erweiterung

1540 Drive Einstellung

Die Kopf-Einstellung für die VC-1540 Floppy wird in der gleichen Weise durchgeführt, wie die Einstellung der CBM 4040 Drives. Z.B.: Der Stepper wird positioniert auf die Alignmentspur (17) und der Kopf ist dann richtig justiert, wenn beide Amplituden gleich groß sind (cat eye's).

A. Die folgenden Teile werden benötigt:

  a. eine Commodore 2040-3040-4040 Alignment Diskette
  b. eine formatierte Diskette
  c. das VC-1540 Einstell Programm
  d. einen Kreutzschlitz- und einen Flach-Schraubenzieher
  e. ein 1-Strahl Oszilloscope mit externer Triggerung

B. Laden sie das VC-1540 Einstellprogramm

C. 1. entfernen Sie die beiden Plastikschalen des Gehäuses der Floppy
  2. lösen Sie die Platine vom Metallgehäuse

D. Stellen Sie ihr Oszilloscope ein auf folgende Werte:
Kanal1
externe Triggerung
20mV/cm
20ms/cm

Messung mit dem Tastkopf an UH5 Pin1 oder 14. Externe Triggerung auf UC2 Pin 9

E. Starten Sie das Programm, so daß Sie die Befehlsübersicht erhalten. Legen Sie die Alignment-Diskette in die Floppy ein.

Befehlsübersicht:

i - Eine Spur nach innen
a - Eine Spur nach aussen
b - Kopf fährt zum Anschlag und positioniert auf Spur 17 (Alignment Spur)
h - Testet ob nach einem Spurwechsel der Kopf wieder exakt auf die Alignment Spur (17) zurück fährt.(Hysteresestep)
e - Einstellung der Spur 1 auf 0.25mm Abstand des Steppermotors zum Anschlag
t - Testet ob eine formatierte Diskette beschrieben und gelesen werden kann

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F. Alignment Einstellung

Die Alignment Einstellung ist dann ok wenn nach bump sound und Hysteresestep die cat eye's eine kleinstmögliche Abweichung in der Amplitude (maximal 20%) voneinander aufweisen.

Ist dies nicht der Fall, so muß der Steppermotor verdreht werden, bis die Amplitudendifferenz im Toleranzbereich liegt. Um den Steppermotor zu bewegen lösen Sie die beiden Schrauben auf der Unterseite der Floppy. Sind die cat eye's nicht zu sehen, so muß der Steppermotor durch Eintippen von "i" oder "a" nach innen oder nach außen gedreht werden, um so die Alignment-Spur zu finden.

Durch Eintippen von "b" (bump sound) wird erneut versucht, nach verfahren des Kopfes zum Endanschlag, die Alignment-Spur zu finden.
Durch Eintippen von "h" (Hysterese) erfolgt ein Hysterese-Step.
Nach jedem dieser beiden Verfahren muß die Toleranz der Amplitude kleiner als 20% sein.

Nun schrauben Sie den Steppermotor wieder fest; danach muß die Einstellung ein weiteres Mal überprüft und gegebenenfalls korrigiert werden.

G. Endanschlag-Enstellung

Um den Endanschlag einzustellen drücken Sie die Taste "e" (Endanschlag). Dann fährt der Kopf von Spur 17 auf Spur 1. Nun sollte zwischen dem Endanschlagswinkel und der Anschlagscheibe des Steppermotors 0.25mm Platz sein.

H. Motorgeschwindigkeitseinstellung

Auf der Unterseite der Floppy befindet sich eine Bohrung an der man das Potentiometer VR1 verdrehen kann um die Motorgeschwindigkeit einzustellen. Die richtige Drehzahl ist erreicht wenn man auf der Stroposkopescheibe ein stehendes Bild sieht.

I. Lese und Schreibtest

Legen Sie eine formatierte Diskette ein. Die Diskette wird neu formatiert und danach wird versucht auf jeder 2.Spur zu schreiben und zu lesen. Treten keine Fehler auf so ist die Floppy richtig eingestellt.

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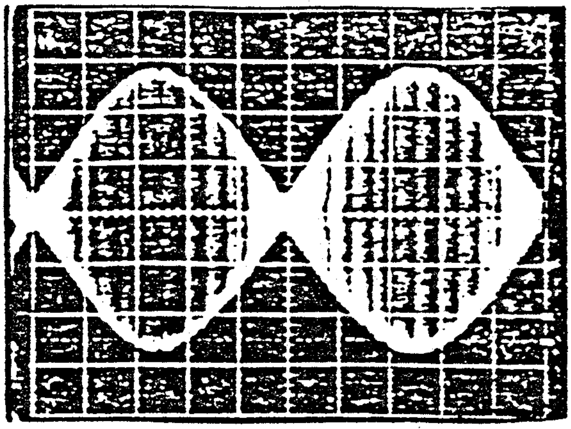
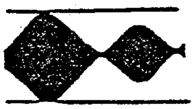
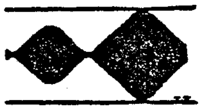


Bild 1 : Optimal eingestellte cat eye´s

schlecht eingestelltes Laufwerk

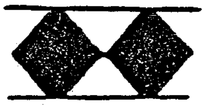


muß nachjustiert werden



muß nachjustiert werden

gut eigestelltes Laufwerk



optimale Einstellung

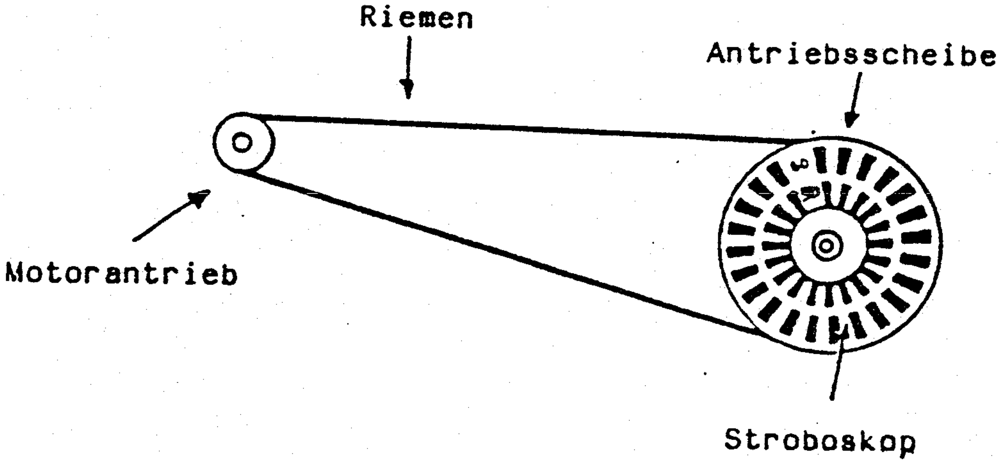

Riemen
Antriebsscheibe
Motorantrieb
Stroboskop

Bild 2 : Stroboskopescheibe und Antrieb

HR 8.7.82 SK

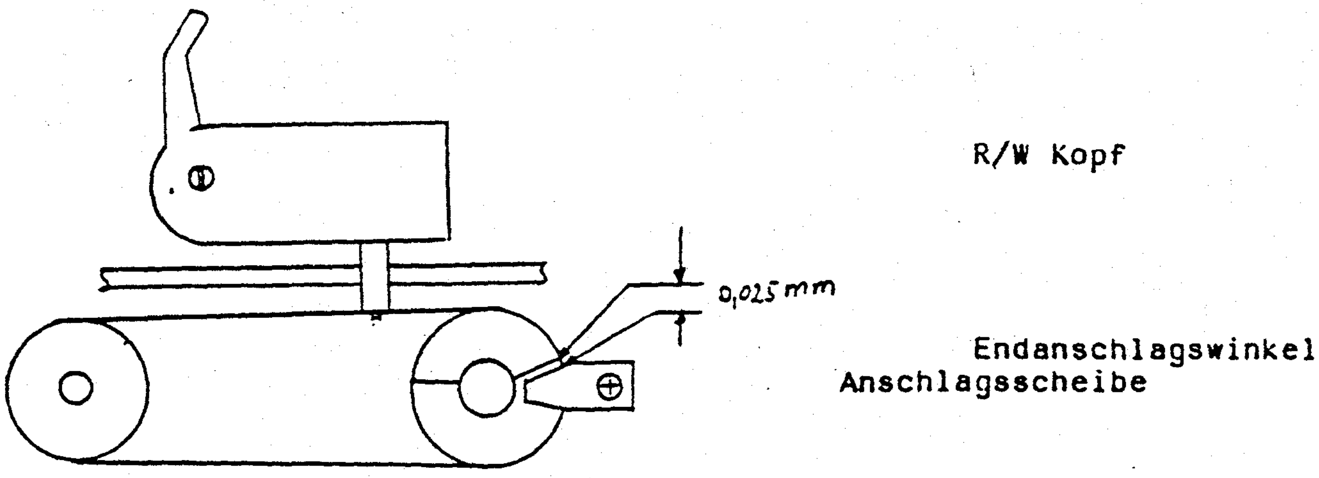
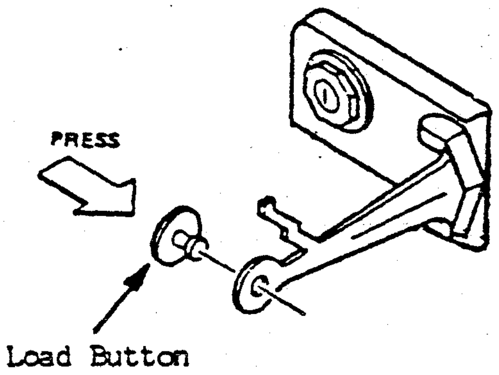

R/W Kopf
0,025 mm
Endanschlagswinkel
Anschlagsscheibe

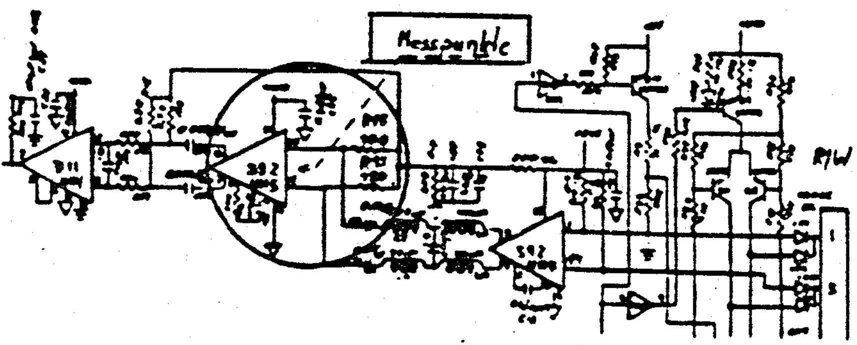
Bild 4: zu Punkt G

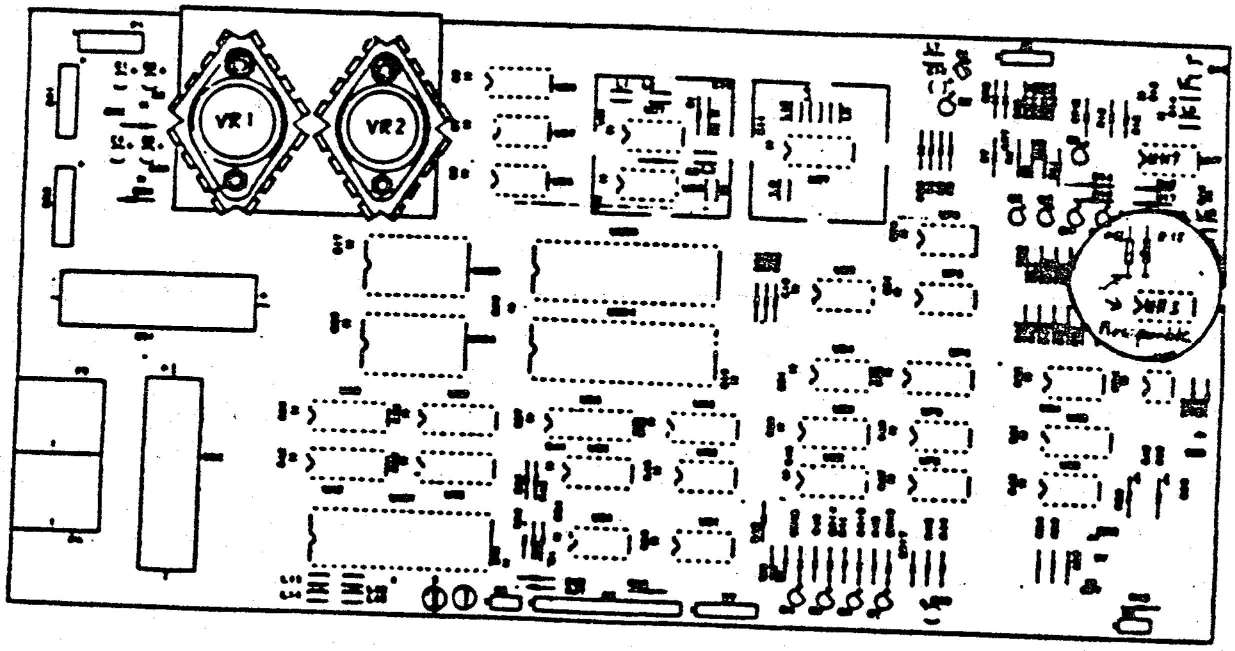
J. Austausch des Andruckfilzes


PRESS
Load Button

Bei Abnutzung oder Vibration (der Drive "singt") muß der Andruckfilz ausgetaucht werden. Mit der Zange wird die Halteklammer des Andruckfilzes zusammengedrückt und herausgezogen. Der neue Andruckfilz wird nur in die Halterung gedrückt.

K. Messpunkte für die Alignmenteinstellung


Messpunkte
R/W


VR 1
VR 2
Messpunkte

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

12. HEAD ALIGNMENT (PERFORMED AT TR.16)

TESTED AT	FACTORY	FIELD
RADIAL	80 %	60 %
HYSTERESIS	80 %	60 %

ALIGNMENT STANDARD
DYMEK ALIGNMENT DISKETTE DK501-2
CE ALIGNMENT TRACK AT 1.9167 ± 0.0003 INCHES

13. AZIMUTH (PERFORMED AT TRACK 34) ±12' MAX.
ALIGNMENT DISKETTE DK501-2
CE ALIGNMENT TRACK AT 1.5417 ± 0.002 INCHES

14. DOOR LEVER TORQUE
14-1 OPENING TORQUE 0.4 – 1.4 kg·CM
14-2 CLOSING TORQUE 0.25 – 0.75 kg·CM

15. DRIVE MOTOR INTERFACE
SIGNAL LEVEL TTL
FAN IN 5

LOGICAL LEVEL	MOTOR
H	OFF
L	ON

16. STEPPING MOTOR DRIVE SEQUENSE

PHASE.	ORG.	BRW.	YEL.	BLK.	
NO. 1	ON				TR. 2
NO. 2		ON			
NO. 3			ON		TR. 1
NO. 4				ON	
NO. 1	ON				TR. 0

* RED ; COMMON

17. SHOCK TEST
OPERATING 0.5 G MAX. (2~50 Hz)
NON OPERATING OR STORAGE CONTINUOUS 5 G MAX.
SINGLE 25 G MAX.

UNLESS OTHERWISE SPECIFIED
TOLERANCES ON:
DECIMALS
.X ± .XX ± .XXX ± ∠'S ±
MATERIAL:
FINISH:

DRAWN BY:	DATE
N. Hanamura	1-10-'84
CHKD:	3/13/84
ENGR: S. Takahashi	3-14-84
APPR:	3-14-84

USED ON
NEXT ASSY

commodore

FLOPPY DISK
NEWTRONICS

SIZE B
251643
REV B
SCALE NONE
SHEET 2 OF 5